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MAY DAY IS CHILD HEALTH DAY

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Division of Publications, American Child Health Association

"THE first of May is every child's day." This is the thought back of the first national May Day Child Health celebration which is being launched by the American Child Health Association and sponsored by President Coolidge, Secretary of Commerce Hoover, governors, mayors, state and local public health agencies, school authorities and citizens' committees throughout the country.

Public health organizations in many cities and states are acting as leaders in local observances of the day. They are planning particularly active programs in the counties and smaller towns. Child welfare organizations, women's clubs, institutions, and social and educational organizations are lending active coöperation.

The press, radio broadcasting stations, and motion picture producers and distributors have promised support that will carry, on May Day, messages of child health from one end of the country to the other.

What is perhaps the first plan book for local child health celebrations throughout the country has been prepared by the American Child Health Association for the occasion, and is being widely distributed. The purpose of this plan book is to give individuals, schools and communities concrete suggestions for centering thought on May Day on the serious purpose of child health and child health education. The program calls for:

A full-time health officer and, in large cities, a director of a Bureau of Child Hygiene.

A health department staff equipped to carry out measures for the registration of births and deaths, control of communicable diseases and the maintenance of health conferences.

Adequate personnel for medical examinations and nursing work (whether under the Board of Education or the Board of Health).

Competent teachers trained in health teaching.

Specialists to deal with such matters as nutrition and physical education.

An active child health committee, representative of any public health federation or health council of social agencies, to correlate the parts of the child health program and to promote its execution.

District committees, especially in large cities, of Parent-Teacher Associations and other neighborhood committees.

An attractive May Day Festival booklet has also been prepared as a companion volume by the American Child Health Association, with the coöperation of the Poets' Guild of America. Pageants and festivals, May Day customs and ceremonies, and a bibliography of May

Day poetry, spring stories and myths, music and dances are a part of this happy and helpful brochure.

In every state a chairman of the May Day observances has been appointed with the assistance and approval of the state officials, especially the health officer. Unanimous coöperation has been given by every department of public health, and in some instances the state officer has accepted the chairmanship of the state May Day organization committee.

Dr. Charles H. Miner, Director of the Pennsylvania State Board of Health, is acting as honorary chairman in Pennsylvania. Dr. J. H. Mason Knox, Chief of the Bureau of Child Hygiene, Maryland State Health Department, is acting as chairman in Maryland. Dr. Clarence Kendall, State Health Officer, has accepted the appointment for Maine.

Dr. Ada E. Schweitzer, Director of the Division of Infant and Child Hygiene of the Indiana State Board of Health, has mapped out a careful plan for the observance of the day in Indiana, where former Vice-President Thomas R. Marshall is state chairman. Dr. Schweitzer urges popular support of suggestions made by public health officials, physicians, nurses and others concerning child health. She suggests the following subjects, each one affecting the child's mental, moral and physical health, for consideration in local May Day programs:

1. State child conservation laws and institutions.
2. Community sanitation and health protection, safety, standards of living.
3. Housing—location, drainage, ventilation, home harmony, healthy parents, standards of living.
4. The child's nutrition—clothing, exercise, rest, sleep.
5. The child's training in regular habits, self-reliance, optimism, altruism.
6. Mother care.

The Massachusetts May Day program, sponsored by Dr. Merrill Champion, Director, Division of Hygiene, will include readings, in all schools of the state, of letters dealing with child health; broadcasting a message of child health; press articles dealing with child health, and the showing of motion pictures dealing with this subject.

The youngest kings and queens that May Day has ever seen will be crowned as part of New York City's municipal celebrations. The Bureau of Child Hygiene of the Department of Health will hold May Day health observances in each of the baby health stations in New York. The two healthiest babies in each station will be chosen as the district's May Queen and King of Health.

With appropriate short and simple ceremonies, at the Central Park celebration later in the day, a baby May Queen and King for the city will be crowned by the Mayor, the Health Commissioner, and the Director of Bureau of Child Hygiene. In the afternoon, a health float, health banners and posters will be a part of the Fifth Avenue parade in connection with Boys' Week. Army airplanes from Mitchell Field will fly over the city and drop flowers along the parade's line of march.

On April 30 it is proposed to have a parade, marshaled by the Mayor's Committee of Women, of all the children who have received milk from this Committee during the past five years. The parade will terminate at the City Hall with appropriate ceremonies. That day, too, will see the inauguration of a new custom, in which two physically perfect children of each of the boroughs will hang a May basket on the Mayor's door at the City Hall.

A splendid example of the coöperation of the public health officials with the celebration is shown by the proclamations which New York City Health Commissioner Monaghan will issue, through the press, urging parents to have general medical health examinations of their children during May, and calling on local doctors, clinics and dispensaries to coöperate in arranging for such examinations.

MEDICAL INSPECTION OF INDUSTRIES

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Address of the Chairman before the Industrial Hygiene Section of the American Public Health Association at the Fifty-second Annual Meeting at Boston, Massachusetts, October 8, 1923.

THE purpose of the medical inspection of industries is to bring the knowledge which the medical man possesses, and which, because of the nature of his training, he alone possesses, to the benefit of industry. There is another usually assigned reason: The medical man is assumed to possess an *ensemble* of information concerning hygiene, but particularly to be qualified to measure hygienic proposals in a better balanced relation to the causation of disease than the lay person who may be skilled, even, in hygiene and sanitation.

The advantages of having the medical man closely in touch with the work place, and by this I mean in touch with the actual processes, seem too obvious to an assemblage of sanitarians to warrant discussion, yet, to the business-trained mind, these advantages lack elements of preciseness, which, I take it, is the main reason for the scarcity of such status at the present time. It is true that we now have some medical inspection of industries and mercantile pursuits, both as governmental and as business activities; that is, four or five states have medical men connected with factory inspection departments and a number of corporations have had the same for a matter of some years. These men actually supervise industrial hygiene, make frequent workplace observations in their respective establishments and endeavor to build up efficiency by collating working conditions and workers. It is true also in several places that the advantage of having a physician supervise the working conditions of a number of smaller establishments has been demonstrated, adopted and publicly proclaimed by such men as Selby in Toledo, McCord in Cincinnati, Emerson in Massachusetts, etc. But even the crudest survey of the whole situation will show that probably less than 5 per cent of the forty-odd million industrial workers in this country enjoy the advantages of that which the physician could impart to working establishments were he permitted and encouraged to do so. It is pointed out, also, that there is a far greater number employed, as well as a far greater amount of health and safety hazards, in the smaller than in the larger plants.

Such is the situation. What are the means and methods used to cope with it? We now have all manner of lay inspectors and supervisors, principally, if not exclusively doing safety work, covering mechanical processes, buildings, mines, quarries, fire hazards, etc., etc., and we have, in a very limited number of instances, a real inspector for ventilation and so-called sanitation, but you will observe all are lay persons and therefore unskilled in physiology, in knowledge of the protean causes and effects of fatigue, of toleration limits, of physical signs and symptoms of disability—in a word, of any training in connecting environment with human tissues, much less the peculiarities which exist in relation to age, sex, nutrition, various idiosyncrasies and impairments.

We see from this, as pointed out by Dr. Price, that what is needed is a specialization of the function of factory inspection among the higher grades of inspectors. This must include the man who sees the safety of the worker from the point of view of biologic efficiency and necessarily must include that man who is properly skilled in interpreting

what the biologic reaction will be in a given setting. In brief, the man with a full training in the science and art of medicine.

We find England and Belgium especially good in their systems of medical inspectors from a governmental point of view, yet we read that in England especially, the certifying surgeon has a field which is too largely curative and too little preventive. What the speaker has in mind is not the presence of a "preventive medical man" for the purpose of determining whether an individual is, or is not, physically or mentally fitted for the job at hand, nor for the purpose of saying, when the inevitable has happened, "Oh, yes, without question, the work which you are doing or have been doing, is largely responsible for the affliction from which you now suffer," but we want the medical man who can see that which makes disease, who looks not less at the individual, but who looks more at his setting, who can go into the factory and point out those health hazards which his dispensary and hospital experiences encounter as end-results, who can spot biologic misfits among employees at given processes, and who can do so months, if not years, before physical and mental impairments follow.

We play the physician only as a catcher on our baseball team. Let's try him as a fielder and later, perhaps, as a baseman. The actuarian is the umpire and the public pays the bills, but the kindly public is immensely partial to low score games, skillful players, and even not averse to the price paid if the game is a good one. I have no hesitancy in saying that, of all the kinds and grades of supervisors of workers and working conditions which now obtain in certain highly developed countries, states and industrial corporations, none can outshine the trained physician in getting efficiency results. He wants but to be encouraged and given an opportunity.

It is perfectly fitting to emphasize at this point that, in this country at least, the physician who comes from any one of the "Class A" medical schools (which means from any one of 71 out of 80 medical schools now in the country), is a man whose college training has been at least six years and usually seven to nine years, making him easily a peer with the liberally and yet specially trained individuals of any community. Surely industry should have as much contact with such individuals as is possible to be had. I cannot fail to point out, also, the great potential which lies with the physician in the direction of moral uplift, opportunity for unbiased activities and for general welfare,—all of which have so much to do with the stabilizing of labor conditions.

We see in the physician, therefore, a trained man whose educational whetting is at least on a par with that of employers and managers, and almost invariably, considerably above that of the average factory inspector. He necessarily therefore commands a much higher esteem from employers and managers than the usual run of factory inspectors and in himself raises a much needed function to a plane of recognition equal to that of other technically or professionally trained persons who are asked to help out in industrial safety and production. You have here a type of man who does not inspect a factory as a detective to catch something wrong and place burdensome orders, and who, if governmentally employed, holds oftentimes a purely political appointment and, possibly, before his next due round of inspection will have been displaced by some other equally unstable if not unqualified individual,—in short, you find a physician the last man permitting himself to be used in any such degrading capacity.

Following this line of thought we have available a man who can at once advise with the engineer in the worthwhile matters of heating, lighting, ventilating and the like; with the chemist, in the matter of manipulating poisonous substances;

with the employment department in the matter of selection, turnover and replacement of personnel; with the legal department in the matter, not only of compensation questions, but of labor controversies; and especially with the production department in the matter of getting out a greater percentage of human effort.

Price in his "Modern Factory" (p. 533) quotes the following from E. F. Brown in regard to the efficiency of factory inspection as it now stands:

"The most dangerously unguarded machinery I have known is the machinery of factory inspection in the United States, exposed to a most pernicious political influence, and to the parsimony of legislators, rendering possible the industrial diseases and accidents which a provident nation would promptly make impossible."

Allow me to propound what I think would be the full and quick solution of this situation: Raise the standards for all grades of inspectors, even though it might be necessary to greatly reduce the numbers of inspectors. At once I am safe you would find pernicious political influences abated. The legislatures would no longer be parsimonous to a personnel having the respect of employers, employees, and the public. Furthermore the day of stunted appropriations devoted to real factory inspection would end. I think it is fundamental, and also human nature, that, except under the most dire stress, a trained and skilled man will cease to hold a job, the demands of which are beneath the dignity of his trade or calling. He will make that job a dignified one. He will show its meritorious points. If it has none he will show that up too. This job-dignity, may I philosophize, is measured by the amount of public benefit which any job can produce, or, stated in another way, a job which does not result in some kind of public benefit is a job with neither dignity nor propriety and will not stand.

We are still awed, in spite of the rate at which a number of our preventable diseases are decreasing, with the astounding barrier of diseases of middle life. We all know, almost on first thought, that diseases of middle life are spurious, unnatural, and should not exist. The tuberculosis rate is falling off, but not as a disease of midlife. We would especially like to see a check on the heart disease and apoplexy situations. We seem as far as ever from any solution of the respiratory disease question. A physician inspecting the industrial phases of the work day could solve some of these conundrums. For instance, we know that tuberculosis is an exceedingly common disease,—that it will take off some 8,000,000 of those who are now living. We know, as physicians, that certain ones are predisposed to that disease, that protracted periods spent daily in stagnant atmospheres at repetitive work without recreation periods are especially causative of that disease, yet such is exactly the combination of factors which obtains in a vast portion of the industries of the country to-day. To give another illustration we know that the uninstructed and ignorant, the negro and the foreign laborer are the leading ones in the manifestations of tuberculosis; we know that the inhalation of dust and fumes is especially concerned with the causation of tuberculosis (and Hoffman says 10 per cent of all wage earners are exposed to dust and fumes). I submit it to any who are familiar with industrial conditions if it is not the ignorant, the negro and the foreigner, who are found employed at the dustiest and fumiest operations? And so on, we might cite examples which stand up like steeples in a city's horizon to the trained eye of a medical sanitarian in explaining some underlying causes of the middle life diseases as well as many other disabilities of the working classes.

The report of the Association of Certifying Factory Surgeons, Great Britain, for the year 1921, makes the simple, bald, but indisputable assertion that the introduction of the medical element into the

study of the specifically dangerous trades has had remarkable results and it would, therefore, appear quite logical to infer that similar machinery and methods would have equally as remarkable results in whole industries noted for extensive disease ravages and the heaviest mortalities.

In one respect America has for some time led the way in its ideas of voluntary action and it is estimated that perhaps some four million industrial workers, principally under the supervision of large corporations, are now within a machinery which can and undoubtedly will within the next few years greatly extend the medical inspection of industries. As a precedence alone this is an excellent prospect. It is, however, high time that governmental agencies should assume commensurate responsibilities for the heterogeneous mass of luckless and usually smaller industries which can never enjoy such benefits of themselves.

We have all seen the attitude of indifference expressed by employees to much of the very beneficial health and genuine welfare work set up by the efforts of employers. It goes without saying that if such had also governmental precedence, example and enforcement it would focus the serious attention of wage earners.

There is another side of the medical inspection of industries. We have in industry a considerable percentage of the productive class which is intermittently or periodically "neurasthenically sick." In other words, which thinks it is sick and is always guarding its health in a purely layman's way and invariably at the expense of industry. It easily gives work as an excuse for more or less imaginary indispositions, and believes in it. It usually fails to appear for the day's work, or loafs on part of it, just at critical times in the progress of business. I dare say this element constitutes 10 per cent at least of those employed. It is a bigger factor than tuberculosis,—perhaps than heart disease. It is not a situation usurped by the manual laborer nor indeed by the office employee. It possesses a high percentage of technical men and overseers who are simply misled, and is a nuisance as well as a tremendous loss. This is again a question which is solvable by no ordinary type of factory inspector. It is fundamentally a medical question. It can come nearest to being solved by the medical man, whose duty it is to point out to these neurasthenic types that they are better off active and accepting work, than they can possibly be through "laying off" or "slowing up," because of the imaginary ill effects of work upon their tender states of being. During the war, if it had not been for the "hard boiled" battalion medical officer, 25 per cent of the force might have been in the noneffective class all the time. Send the case to the doctor not to himself. In fact, let the doctor have a look-in at all instances of human unproductiveness. So much of it lies in his special field of knowledge.

In closing let me say that I have no brief whatever for a bureaucracy of medical inspectors of industry,—civil, corporational, or governmental. I plead simply for an extension of the economic possibilities which lie with the trained medical man in the workplace.

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The Fifty-third Annual Meeting of the American Public Health Association will be held at Detroit, Michigan, during the week of October 20th, 1924.

STANDARDS OF MEASUREMENT OF TEN THOUSAND MALE WORKERS: PRELIMINARY NOTE, WITH SPECIAL REFERENCE TO RACIAL FACTORS

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Read before the Industrial Hygiene Section of the American Public Health Association at the Fifty-second Annual Meeting at Boston, Massachusetts, October 8, 1923.

DURING the last ten years numerous industrial surveys have been made by the U. S. Public Health Service. In the course of these surveys, approximately 10,000 general physical examinations were made of male workers and approximately 2,000 of female workers. We fully realize the difficulties of interpreting general physical examinations, especially when they cover a long period and are made by several different physicians. Knowledge of industrial hazards is derived chiefly by study of a specific problem through methods carefully chosen with that definite purpose in mind. None the less, in view of the large numbers involved and the almost complete absence in the literature of data on physical or physiological measurements of industrial workers in this country, it seemed worth while to determine what information could be secured by a statistical analysis of these general examination records. The results of the examinations in the garment and pottery industries have already been published.[1]

If physical measurements and records of diseases and defects are to be used at all in the study of industrial conditions, it is quite manifest that in a country like the United States the factor of race must be given detailed consideration. The average industrial population is made up of persons differing widely in race stock, and, furthermore, the distribution of these stocks varies greatly with the kind of industry or occupation. Hence, if it be found that any average or measurement varies with the race, we have here a factor which must be dealt with before the effect of industry can even be roughly approximated.

It is that element of the problem which we wish to discuss to-day in a preliminary way. The study will be limited to males, as there are too few records of females to permit the calculation of averages for that sex. Only a few of the results which have been obtained can be touched on, the purpose being primarily to emphasize the importance of the racial factor in industrial investigations. It is expected that the completed study will appear as a bulletin of the Public Health Service.

The data are of especial interest in view of the fact that, if we except stature and possibly weight, almost no statistics are available for a comparison between races and none at all in regard to groups of workers with the racial composition found in American industry. Of the data that exist, many are based on insufficient numbers and innocent of any distinctions as to age. For instance, Deniker[2] gives the average vital capacity as 3.7 liters among the English, as 3 among the American white, and as 2.7 among the American colored, age not being referred to. The number of cases on which these averages are based is not indicated. The data of the Public Health Service show consistent changes with age. For the age group, twenty-five to thirty-four,

1. (a) Studies in Vocational Diseases, I. The Health of Garment Workers, by J. W. Schereschewsky. Public Health Bulletin No. 71. (b) Lead Poisoning in the Pottery Trades, by Bernard J. Newman, William J. McConnell, Octavius M. Spencer, and Frank M. Phillips. Public Health Bulletin No. 116.

2. The Races of Man: An Outline of Anthropology and Ethnography. J. Deniker. Pp. 108-109. In this book the measurement of vital capacity is termed *cubic meter*. Apparently *cubic decimeter* (*i.e.*, liter) is meant.

our results are 4.2 liters for the English industrial worker in this country, 4.5 for the American white, and 3.9 for the colored. For the age group thirty-five to forty-four the averages are about .3 of a liter less, and for higher ages very much less. Deniker also gives the pulse rate among American white as 74.8 and among colored as 74 beats to the minute. The Public Health Service figures for industrial workers of the corresponding races are almost 10 beats to the minute higher, as will be noted presently. For other physiological measurements practically no data seem available.

It is difficult to arrive at standards of measurements. A low average shown by one race may be low because part of the workers of that race labor under adverse industrial conditions, while the average for another race may not be so affected. At the same time, it is thought that the averages do serve as something of a standard beside which the records for each industrial group we have studied may be placed. How far such averages may be applied to other studies, or to industry in general, is a matter of some uncertainty.

In the case of most of the examinations, race depended upon the statement of the individual, and was classified according to subdivisions of the Teutonic, Slavonic and other race groups, namely, American white, English, German, Irish, Russian and Austrian, Polish, Italian, and colored. A few Canadian are included with the English, and some Slavs who are not Russian or Austrian with that group. The other races were not sufficiently represented to be analyzed statistically. One group omitted from this preliminary study is that of foreign-born Jewish. Ninety-six per cent of these were in the garment trades. For this reason the group could not be thought of as representative of the industrial workers of that race. Each of the other groups may contain a number of Jews.

The American group is native-born white, but no long line of American ancestry is to be predicated. From a racial point of view, therefore, the class is a mixed one, varying from one industry to the next in its composition, and is the least satisfactory of our groups. It should be stated, however, that the other racial groups are not necessarily limited to the foreign-born. Of the Polish, 94 per cent are foreign-born; of the Italian, 87 per cent; of the English, 56 per cent; of the Irish, 45 per cent; and of the Germans, 30 per cent. The Russian and Austrian group is entirely foreign-born. Since in different surveys varying forms and instructions were used, it is only to be expected that the race would not always be recorded consistently.

In our preliminary tabulations the physical measurements have been determined by race, independently of the specific industry. It will evidently be true that the workers of a certain race will be more concentrated in some industries than in others; hence, caution must be exercised in concluding that variations noted are due to race rather than to factors associated with industry or that the averages are representative of each race as a whole. For this reason the data presented in this paper must be regarded as somewhat tentative and subject to revision. In our further studies, an attempt will be made to eliminate these factors in so far as possible. In the meantime, consideration of the distribution of the races in each industry will throw some light on the reliability of the results.

Table 1 gives the number of employees of each race in each industry, and Table 2 reduces these figures to an index basis to eliminate the effect of unequal numbers in each race and in each industry. For instance, the percentage of American white who were in the pottery industry, namely, 28, was calculated; likewise that of the Irish, namely, 17. This eliminated the effect of the greater number of American white in the whole survey; but not that of the much greater number of per-

TABLE I.

NUMBER OF MALE WORKERS OF EACH RACE IN EACH INDUSTRY.

	American White	English	German	Irish	Polish	Russian and Austrian	Italian	Foreign Born Jewish	Colored	Other	Total
Garment	1	1	1	0	4	0	66	1832	0	147	2052
Glass	829	42	156	46	25	11	107	1	34	256	1507
Pottery	848	156	79	108	19	6	43	0	3	128	1390
Foundry	217	77	107	180	118	140	162	0	108	203	1312
Post Office	294	36	147	161	28	85	17	15	107	182	982
Steel	360	39	27	14	25	227	21	5	1	215	934
Chemical	281	40	21	43	203	160	129	6	2	25	910
Cigar	88	3	5	1	1	1	75	0	13	241	398
Gas	102	2	21	91	71	4	38	3	0	21	353
Cement	120	1	2	3	0	0	57	0	7	33	223
Total	3020	397	566	647	494	634	715	1862	275	1451	10061

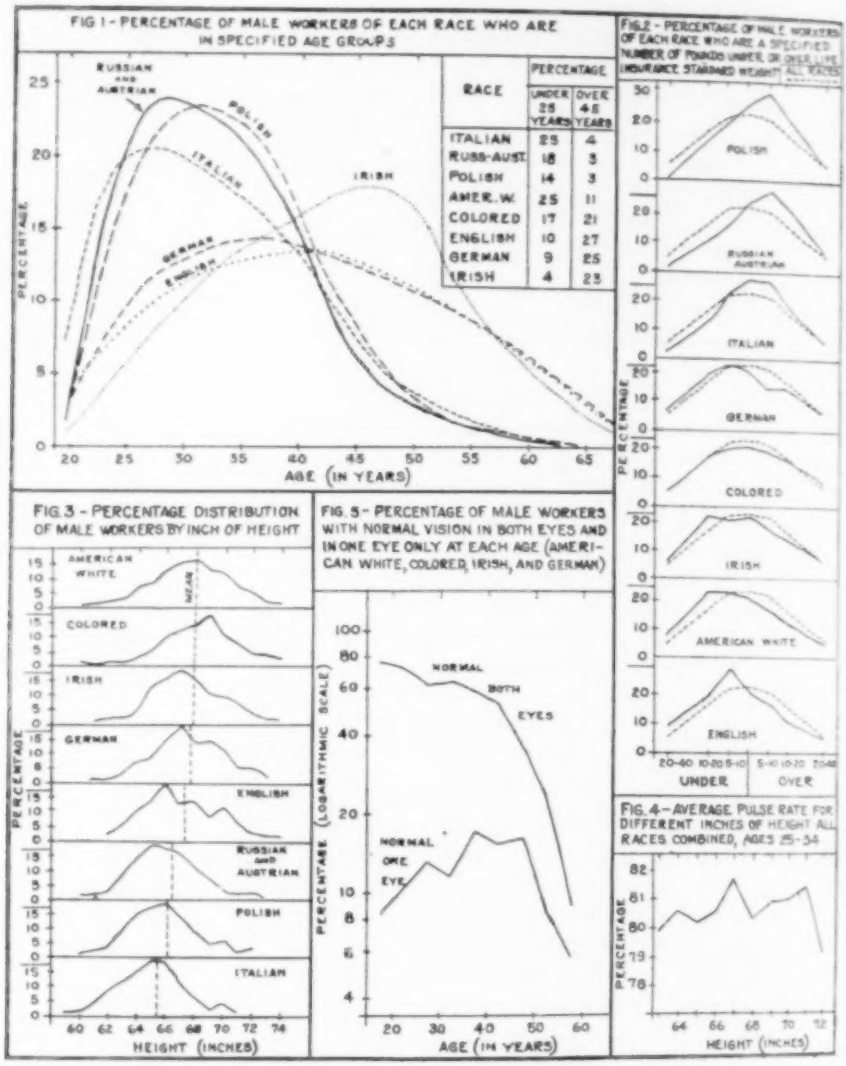
TABLE 2

RATIO OF THE PERCENTAGE OF MALE WORKERS OF EACH RACE IN EACH INDUSTRY TO THE PERCENTAGE OF ALL RACES IN EACH INDUSTRY.

	American White	English	German	Irish	Polish	Russian and Austrian	Italian	Foreign Born Jewish	Colored	Other	Total
Garment	...	...	...	...	...	...	.4	4.8	...	.5	1.0
Glass	1.8	.7	1.8	.5	.3	.1	1.0	...	.8	1.2	1.0
Pottery	2.0	2.9	1.0	1.2	.3	.1	.4	...	.1	.6	1.0
Foundry	.5	1.5	1.5	2.1	1.8	1.7	1.7	...	3.0	1.1	1.0
Post Office	.7	.9	2.7	2.5	.6	1.4	.2	.1	4.0	1.3	1.0
Steel	1.3	1.1	.5	.2	.5	3.9	.3	...	...	1.6	1.0
Chemical	1.0	1.1	.4	.7	4.6	2.8	2.0	...	.1	.2	1.0
Cigar	.5	.2	.2	.1	.1	.1	2.6	...	1.2	4.1	1.0
Gas	1.0	.1	1.1	4.0	4.1	.2	1.5	.1	...	.4	1.0
Cement	1.8	.1	.2	.2	...	...	3.6	...	1.1	1.1	1.0
Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

sons of all races examined in the pottery industry than, for instance, in the cement industry. Therefore, we took the ratio of the percentage of Americans in the pottery industry to the percentage of all races in that industry, and likewise for each other industry. The ratio of Italians in the chemical industry is 2.0, meaning that there were twice as many Italians in that industry as would be expected in a purely random distribution.[3] An even greater concentration of this race is noted in the cement and cigar industries. The Poles are chiefly in the foundry, gas and chemical industries; the Russians and Austrians in the steel and chemical, with a considerable proportion in the foundry and post office; the Irish in the foundry, gas and post office; and the colored in the foundry and post office. The American white and the English show a fair proportion of workers in nearly every industry. It must be concluded, then, that the averages of physical and physiological measurements are subject to a certain error due to the concentration of particular racial groups in special industries. You will realize readily enough, also, that the distribution which is indicated in these tables might not be true in industry generally, since our surveys have dealt with only certain limited aspects of each industry.

3. This is a literal interpretation of the figures On the basis of pure chance, the probability of occurrence of an Italian in any particular group of our 10,000 workers is 715/10061, because there were 715 Italians, and likewise, the probability of occurrence of an individual in the chemical industry is 910/10061. Thus the probability of the occurrence of an Italian in the chemical industry (the product of these two probabilities) is $\frac{715}{10061} \times \frac{910}{10061}$, and the probable *number* $\frac{715 \times 910}{10061}$. The actual number was 129, therefore we have (ratio of actual to probable) $129 \times \frac{10061}{715 \times 910} = 2.0$. The same method could be used to obtain any of the figures in Table 2; but, although suggestive, this procedure is more difficult to explain in a speech than the one used in the text.



A rather bewildering variation in age distribution in the different races is found. The English, Germans, and especially the Irish were much older on the average than the Italians, Poles, and Russians and Austrians. The American (white and colored) assume a middle ground. For instance, 25 per cent of the Italians were under twenty-five years of age, and 4 per cent of the Irish. Practically the reverse is true in the over forty-five years of age groups, there being 4 per cent Italians and 23 per cent Irish. Figure 1 indicates the age distribution graphically, the curve for Americans having been omitted to prevent confusion. In this paper we can be concerned with age only as a disturbing factor, but such it undoubtedly is, and must be allowed for when studying any phases which show variation with age. It is to be observed that the Celtic and Teutonic races contrast in this case with the Slavonic and Italic.

Does race enter as a factor in determinations of overweight and under-

weight? Can a single standard, such as that compiled by the Association of Life Insurance Medical Directors and the Actuarial Society of America, for the weight of individuals of a certain height and age, be used in the study of overweight and underweight in industry, or must separate standards be used for each race?

We have come to feel that build or stockiness is an important factor in the matter of weight and nutrition, and if this is so as to individuals of the same race, it will certainly be equally so in the case of different races. The number of pounds over or under the standard was tabulated for each individual. This was done, not on the assumption that race made no difference and that a single standard could be used, but because there were no standards evolved for different races and because it was thought that in this way one could easily learn what precise differences the races showed. Weight tables for each inch of height and each age group have also been prepared, but for this preliminary paper, a discussion of overweight and underweight must suffice.

Figure 2 gives the percentage of employees of each race who were a certain number of pounds under or over the life insurance standard. The dotted line is the average for all eight racial groups, i.e., the mean of the percentages for each race. The interval of underweight and overweight groups is not the same in all cases. The groups are 40 or more pounds underweight, 20 to 39 underweight, 10 to 19 underweight, 5 to 9 underweight, etc. Correction has been made in the graph, by multiplying or dividing by a factor which assumed a constant interval of 10 pounds.

Clearly the Polish, Russian, Austrian, and Italian weigh heavier at the same height and age than do the German, colored, Irish, American white, and English. These distinctions may not be purely racial, but may be partly due to industrial variations. The differences are so definite, however, that, if one is studying the average weights of workers in industries, he should have to make allowance for the normal racial variation, whatever its cause. On the other hand, if his point of view is simply that of studying the characteristics of a group which are, let us say, 20 pounds overweight, the single standard might possibly suffice.

In calculating the weight of each race at a certain height and age, we are not determining the actual differences in weight between races, since the height also varied with race. For instance, Table 3 gives the average height of each race group (age has not been considered, since height does not vary with that factor within the range of ages covered by the great majority of workers). It is significant to compare these results with those obtained on demobilization of the American forces at the end of the war and in certain studies by Hrdlicka. These are included in the table. Quite a consistent comparison is found. Figure 3 gives the percentage distribution by height, and shows clearly that the differences in the means are not a matter of chance.

It will be observed (comparing Figures 2 and 3) that the tallest races are not the races which have been found to have the heaviest build. In fact, the relationship is somewhat reversed. Nevertheless, as Table 4 indicates, weight regardless of height, shows quite definite differences as to race, as well as a fairly consistent increase with age.

Of the measurements of physiological activity, blood pressure and pulse rate may be discussed. Blood pressure, either systolic, diastolic, or pulse, has not been found to vary significantly with race in these studies, and it is altogether possible, so far as these data are concerned, to use as a standard the average pressure for all races. It might be stated that the foreign-born Jewish group, omitted from

TABLE 3.

AVERAGE HEIGHT OF MALE WORKERS OF EACH RACE, TOGETHER WITH CERTAIN OTHER DATA IN REGARD TO STATURE

	Industrial workers (P. H. S.)	American forces on demobilization[1]	Data on males compiled by Dr. Hrdlicka[2]
American White	67.9	.....	727 "Old Americans", 68.6
Colored	67.9	.....	
Irish	67.8	67.5	50 Irish, 67.6
German	67.7	67.7	
English	67.3	67.7	
Russian-Austrian	66.0	.....	100 Russians: Non-Jews, 66.9; Jews, 64.8
Polish	66.2	66.7	50 Poles, 67.1
Italian	65.5	65.0	100 Italians: North 66.8; South, 64.3

[1] Source: Medical Department of the United States Army in the World War. Vol. XV. Statistics. Part I. Army Anthropology. By Charles B. Davenport and A. G. Love. Page 113.

[2] Source: Anthropology of the Old Americans. II. Stature. By Ales Hrdlicka. American Journal of Physical Anthropology. July-Sept. 1922. (All are adult males. Except for the "old Americans" they are immigrants, measured at Ellis Island. The "old Americans" are a group who had no mixture in their families with more recent elements of the population on either side for at least three generations.)

TABLE 4.

AVERAGE WEIGHT OF MALE WORKERS OF EACH RACE, FOR THREE AGE GROUPS.

	25-29 years	30-34 years	35-39 years
Colored	153	161	163
Russian and Austrian	153	156	154
German	150	155	154
Irish	149	153	155
American White	149	151	154
Polish	149	152	150
Italian	145	147	147
English	142	147	145

this study because they were concentrated in a single industry, did show significant variations from other races, the pulse pressure being uniformly low in all age groups. This was due, not to a low systolic, but to a high diastolic, pressure. It is possible that these differences are not to be thought of as racial, but as merely reflecting an unusual industrial group. Table 5 gives the blood pressures, all eight races combined, for each age group, together with certain standards worked out in other studies. The blood pressures of the group of workers are somewhat higher than those recorded in the other studies.

In the case of pulse rate, some contrast as between the racial groups was noted, but it is not marked. Pulse rate did not seem to vary significantly with age; therefore Table 6 gives the average pulse rate of each race, without regard to that factor. The rate ranges from 83 to 80, not a great fluctuation, but one that seems to be significant statistically. It is interesting to note how much higher all of these averages are than the rates which physiologists formerly thought were normal, such as those we have already referred to. Here, as in so many other cases, the Teutonic groups appear to contrast with the Slavonic and southern European. This is of considerable moment from an anthropological standpoint.

We have felt that, in the analysis of data of this character, it might be possible to check up a few hypotheses of physiology. Frequently, conclusions have been passed down from book to book without having been based in the first place upon a sufficient number of cases to make them entirely reliable. For instance, it is stated in a standard work on physiology that pulse rate decreases with height for persons of the same age. We know, of course, that generally speaking the larger the animal the lower the pulse rate. However, the Public Health Service data do not show that there is any increase or decrease of consequence with height

TABLE 5.

BLOOD PRESSURE AMONG MALE WORKERS OF ALL RACES[1], TOGETHER WITH DATA FOR SYSTOLIC PRESSURE FROM OTHER SOURCES.

	SYSTOLIC			DIASTOLIC	PULSE
	Life Extension Institute[2]	Fisher[3]	Public Health Service		
No. Cases	50,000		6,700		
Under 20[4]	120	120	124	73	51
20-24	123	122	127	76	51
25-29	124	123	129	77	52
30-34	124	124	130	79	51
35-39	127	126	131	81	50
40-44	129	128	133	82	51
45-49	131	130	137	83	54
50-54	132	132			
55-59	135	134			
60-64		135	146	85	61
65 and over		136			

[1] Public Health Service data for the eight races considered in this paper (excluding foreign-born Jewish and other races).
[2] By correspondence.
[3] Medical Insurance and Health Conservation (Vol. xxvii, pp. 316-320) 1917-18.
[4] In cases of Life Extension and Fisher data, the age groups are 15-20, 21-25, 26-30, etc.

TABLE 6.

AVERAGE PULSE RATE OF MALE WORKERS OF EACH RACE.

	Pulse Rate	Probable Error	Number of Persons
German	83.3	.37	533
American White	83.0	.15	2874
Irish	81.7	.28	601
Italian	81.7	.31	695
English	81.4	.40	361
Colored	80.9	.51	272
Russian and Austrian	80.5	.30	623
Polish	80.3	.33	472

TABLE 7.

PERCENTAGE OF MALE WORKERS OF EACH RACE WHO HAD NORMAL VISION IN BOTH EYES, IN THREE BROAD AGE GROUPS.

	Under 30	30–39	40 and Over
Colored	71	61	30
American White	70	64	34
Italian	68	61	53
Irish	68	56	33
German	60	54	27
Russian and Austrian	57	48	29
Polish	56	57	29
English	53	56	28

Since there was also no variation with weight, it has been possible to combine workers of all weights. Figure 4 shows, for the age group twenty-five to thirty-four, the average pulse rate, all eight races combined, for each inch of height. There is evidently no significant change. To reveal any fluctuation at all it has been necessary to disregard the zero base line; otherwise the curve would appear practically as a straight line. A comparison of Tables 3 and 6 does not show any tendency for the taller races to have a slower average pulse.

An analysis of the vision of the employees examined fails to show any great variation in the different races. An exception to this is the record of the foreign-born Jewish, but it is quite clear that they are subject to special hazards as to vision in the garment trades and it is not possible at present to determine

whether a Jewish group outside of this industry would show equally defective vision. In comparing the races (Table 7), some differences which are difficult to explain exist, but with the data on hand, it is not possible even to be certain that these differences are significant. The percentage with normal vision in both eyes (20/20 or better) averages, for all races, for the age groups under thirty, thirty to thirty-nine, and forty and over, about 63, 59, and 33, respectively.

These percentages show considerable change with age, and, as an indication of the uses to which the records of physical examinations may be put, this point may be considered in more detail. Studies by the Public Health Service of illumination in particular groups indicated that there seemed to be in industry a critical period of life when the vision began to deteriorate rather more rapidly. It was of moment, therefore, to see whether any such period could be established by a study of all of the industries surveyed by the Service. Owing to the possibility of there being racial differences, it seemed preferable to study a group which was shown, by Table 7, to have no significant differences, namely, the American white, colored, Irish, and German. To indicate clearly the rate of change from age to age, the results were plotted on paper with logarithmic ordinates, so that a change in the direction of a line would indicate a change in the rate of deterioration of vision. The curves in Figure 5 represent the percentage with normal vision in both eyes and with normal vision in one eye only. At about the age forty or forty-five, there seems to be a change in direction in the curve representing the normal in both eyes, an acceleration in the rate of deterioration. Also at about this age, the curve for normal in one eye, which had previously been rising, now begins to decline sharply.

The statistical data have evidently been affected to a marked degree by the necessity of having the examinations in different industries made by different physicians. We have found that the interpretation by physicians of conditions which potentially mean the same thing are likely to vary, making a statistical classification difficult. Physicians differ a good deal, also, in their opinion as to the degree of defect which they believe to be serious enough to record. Since one physician, or at least a very few, would make the examinations in one industry and an entirely different group in another, a great deal of variation has been introduced in the rates due to this factor. Some error was also introduced by the use of examination forms which differed somewhat in type. In some cases each specific condition was mentioned, in others certain physiological facts or parts of the body were named, and the examiner was expected to indicate "deviations from the normal." Some minor conditions are more likely to be overlooked if not specifically mentioned on the form. In preference to giving tentative results which might later require modification, it has seemed best to postpone discussion of the physical defects and diseases until fuller analysis is practicable.

It has been possible to mention only a few of the subjects which have been analyzed in the course of the studies. In the final bulletin it is hoped to give all of the material in such detail as may be justified. But it might again be emphasized that general physical examinations have definite limitations in the interpretation of industrial conditions. It is one thing to undertake an examination for a specific purpose, such as roentgenogram studies of the lungs in occupations where there is a dust hazard; it is another to attempt to derive fundamental laws of industrial hygiene from general examinations. At the same time, we feel that some light on industrial conditions may be thrown by the analysis of these physical examinations, and that from an anthropological point of view the data are distinctly interesting.

BREAST FEEDING FROM A PUBLIC HEALTH STANDPOINT

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Read before the Child Hygiene Section of the American Public Health Association at the Fifty-second Annual Meeting at Boston, Massachusetts, October 11, 1923.

IT IS a truism that public health is purchasable, but the time has come when we must balance our budgets and decide which divisions of public health are paying dividends. We must begin to place public health on an efficiency basis and figure out how much in preventive mortality and morbidity we are getting for our money. If we find that a disease with an extremely high death rate, such as pneumonia, does not, in the present state of our knowledge, readily lend itself to preventive work then we must retrench in this particular department and expend our money and effort in more profitable fields. If we look at public health from this business-like standpoint we cannot fail to rank the promulgation of breast feeding education as one of our best investments. To prove the truth of this statement will be the object of this paper. I shall endeavor to demonstrate two theses—first, that increased breast feeding dramatically reduces infant mortality; second, that the breast feeding education plan inaugurated in Minneapolis definitely increases breast feeding.

For years there have been loose statements made concerning the relative mortality in breast fed and artificially fed infants, but, until recently there has been scant statistical evidence to support this. However, a recent study by the Children's Bureau at Washington has remedied this defect. This statistical study comprised 22,422 live-born infants in eight American cities and a preliminary study of these figures has recently been published.[1]

Table No. 1 shows that the infant mortality in artificially fed infants is between three and four times as high as among breast fed infants.

Woodbury has carefully analyzed these figures and has shown that even after deducting the unusually large numbers of prematures and twins from the artificially fed group and after making due allowance for the economic circumstances of families, the relative proportions are not markedly changed. He summarizes the work as follows:

"The analysis has shown that artificial feeding as actually practiced in typical city populations, is associated with a mortality between three and four times as high as the mortality among breast fed infants. This excess mortality is not to be explained either by the slight overweighting of the group of artificially fed with infants in certain groups characterized by high mortality rates; and it appears in all nationalities and in all earnings groups, though with variations depending probably upon the particular conditions prevailing in these groups."

1. The Relation Between Breast Feeding and Artificial Feeding and Infant Mortality. Robert M. Woodbury, Amer. Jour. Hygiene, Vol. 2, No. 6, 1922, p. 668.

TABLE NO. 1.

MONTHLY MORTALITY RATES, BY TYPE OF FEEDING; INFANTS IN EIGHT CITIES

Monthly probability of dying per 1,000 infants

Month of life	All types of feeding	Exclusively breast-fed	Partly breast-fed	Exclusively artificially fed
First	44.8	16.9	36.4	54.7
Second	9.3	5.8	14.7	24.6
Third	8.1	3.7	12.9	21.2
Fourth	8.0	3.4	9.0	19.2
Fifth	7.7	3.3	5.7	18.1
Sixth	7.4	2.1	5.9	17.7
Seventh	6.3	1.9	4.0	14.1
Eighth	5.8	2.9	3.3	11.3
Ninth	5.7	3.2	2.9	10.7

This study by the Children's Bureau establishes beyond all doubt the relative mortality of breast fed and artificially fed infants.

The second question to be determined is, can our breast feeding educational work really increase the practice of breast feeding enough to repay our efforts. I will first detail the actual work as done in Minneapolis, originally started by Sedgwick. There are two outstanding features of our procedure: first, the visits into the home soon after the birth of the baby; second, the teaching of breast expression. The visits into the home are made by our regular infant welfare nurses when the baby is three weeks old from birth lists received by the city health department and distributed to the nurses once a week. What the nurse does on this first visit is best told by quoting verbatim from the nurses' manual of the Minneapolis Infant Welfare Society:

Purpose of the Birth List Visit:

1. To urge every mother to nurse her baby.
2. To teach manual expression where necessary and desired.
3. To tell the importance of regular and complete physical examination and advice by a physician.
4. To judge whether mother is able to secure this advice, and if not, to urge her to attend the Infant Welfare Clinics.

When you realize that in these visits you may not have been sought, but are taking the initial step yourself; that in many cases the financial and educational standards of the family render your visit unnecessary; and that in many more, where the need, perhaps, is greatest you will find antagonism, you can see how essential it is to use your best judgment and discretion at all times. Keep always in mind that your purpose is to impress upon the mother that the basis of a healthy life for her baby rests in giving him the right start and this lies in her hands.

Introduce yourself as the "baby nurse" and explain that you came in the interest of the new baby. If the mother asks who sent you, you may say that the Infant Welfare Society calls on all new-born babies, but do *not* mention the Infant Welfare Clinics.

If you are not given a hearty welcome, but are greeted with antagonism, try to arouse interest instead of resentment, and at least form the basis for a future friendly contact. As a matter of fact, you will usually find you are welcomed, and often that your visit has been awaited. Try to make this first visit at the time when the mother is thrown on her own resources, at which time she is invariably anxious to receive help and suggestions.

Express interest in the fact that there is a new baby, and explain that you have come to urge breast feeding and regular examination and advice. Get facts as to the mother's condition and the baby's condition; notice home surroundings. sanitation, etc.

Suggested questions:

1. Is the doctor still in attendance?
2. If not calling the doctor, on what advice is the mother proceeding?
3. How is she feeding the baby? How often does she intend to consult the doctor in regard to the baby's feeding?
4. If nursing, does the baby seem to be getting enough? Is he gaining? Is he weighed?
5. If any trouble about nursing, has expression been taught, and is it being practiced?
6. If consulting her doctor, what has he advised about the baby's feeding? Is she intelligently following this advice?
7. Does the mother insist on examination with the baby undressed?

Your birth list cards should answer the above questions.

If the baby has been taken off the breast, find out reason for so doing. If the doctor is still in attendance, or has been recently, do not advise any change or teach expression without consulting him. If the mother feels that her baby is not gaining as he should and has started a complementary feeding without the doctor's advice, call the doctor yourself and ask his permission to teach expression.

In a case where the doctor has not been consulted since birth, where there is obvious inability to pay the doctor, and the mother has taken the baby off the breast and resorted to various kinds of patent foods, urge attendance at clinic.

The nurse also leaves in the home a four-page pamphlet in which the following well known facts are emphasized: That the baby be nursed at regular intervals, every three or four hours, and

that, in the early months, an artificial feeding never be substituted for a breast feeding; that if artificial feeding is necessary it be given in the smallest possible amounts and immediately after the nursing; that by far the best method to increase the mother's supply of breast milk is to completely empty her breasts after every nursing by manual expression and not by use of the breast pump. The technic of expression is as follows: The breast is grasped between the thumb and forefinger, just back of the areola, the fingers pressed firmly but gently together, squeezing a portion of the breast between them, and then with a *sudden* motion toward the nipple the milk is ejected in a stream. In the last motion the fingers do not move their relative position on the breasts, being allowed to slip between the fingers. The technic requires practice but when once learned is easily done.[2] The success of this method depends on the fact that with a weak or lazy nursing baby the breasts are not fully emptied and as a result they secrete less and less. The objection has been made that the success is entirely due to psychological suggestion to the mother, but the underlying biological principle is well recognized in the dairy industry where the thorough emptying of the cow's udder is recognized as a necessity for a continued maximum supply.

We have many examples of mothers whose milk supply has practically disappeared and who in two weeks by faithful attention to emptying the breasts, have had a full supply for their infants.

The importance of the personal visit of the nurse at three weeks of age cannot be overestimated. Mailing information does not get across. Prenatal education as to breast feeding is often forgotten. The time to bring forward our facts is at the critical moment when the mother is beginning to doubt the advisability or the possibility of nursing her baby. Originally in our scheme the cases were followed up by postcards and telephone calls every other month, and if the mother was having difficulty personal visits by the nurse were continued. Briefly, the method employed at that time was as follows: (a) birth list received daily from health department; (b) permanent cards made out from these lists and distributed to staff of nurses by districts; (c) schedule: first, visit to be made at end of second week; second, visit to be made at end of second month; third, contact circular sent at end of fourth month; fourth, contact circular sent at end of sixth month; fifth, contact circular sent at end of eighth month; sixth, contact circular sent after ninth month.

Financial considerations have forced us to discontinue this important follow-up feature of our work.

The important question remains to be decided. Do these methods perceptibly increase breast feeding? The best method is to compare our figures with those of the Children's Bureau.

Our figures were the result of an investigation in breast feeding of 3,392 babies born in Minneapolis in the first six months of 1920. Table No. 2 shows a comparison of the number of breast fed babies in the eight cities taken by the Children's Bureau and in Minneapolis with our intensive propaganda. The figures show the proportions in Minneapolis vary from 13 per cent higher in the first month to 17 per cent higher in the ninth month.

TABLE NO. 2

NUMBER OF BREAST FED INFANTS

Month of Life	Minneapolis	Eight Other Cities
First	97.9	89.8
Third	93.6	79.6
Fifth	89.8	72.8
Seventh	83.4	68.5
Ninth	78.7	64.9

We have been able to show, first, by the unassailable statistics of the Children's Bureau that the mortality among artificially fed infants is between three and four times as great as that among breast fed infants; second, that with our

2. Mother and Child Health Talks, No. 5, The Importance of Breast Feeding. E. J. Huenekens.

intensive breast feeding program in Minneapolis, we have been enabled to decidedly increase the proportions of breast fed infants.

The breast feeding propaganda as outlined above is purely an educational matter. It can be done by Infant Welfare Societies in connection with their Infant Welfare Clinics, but to obtain the best possible results the two should be separated. Infant Welfare Clinics are partly educational and partly relief work and it hampers breast feeding propaganda to be tied up with the clinics and the cooperation with private physicians is made more difficult. The ideal way to have this work done would be to have specially trained city health department nurses, who have no connection with clinics of any kind and who would carry these visits into every home in the city regardless of the economic status. This is a tremendous piece of work, which might well be fostered by one of our big national foundations until the public has been convinced of its value.

THE PLACE OF NUTRITION IN THE SCHOOL PROGRAM

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Read before the Child Hygiene Section of the American Public Health Association at the Fifty-second Annual Meeting in Boston, Massachusetts, October 11, 1923.

THE Commissioner of Education of one of the southern states has been quoted as saying that "teaching people how to live is the biggest and most important problem that the schools can undertake." Teaching how to live necessitates teaching the underlying principles of good nutrition. Consequently, if we accept the truth of the first statement, we acknowledge that nutrition has a most important part to play in the school life of every child.

What its relation to the rest of the school program shall be is the question under discussion in this paper. I may say, however, that due to the fact that the whole field of nutrition is such a new one, it is quite impossible for anyone at the present time to answer this absolutely.

First, let us consider the ultimate aims of a school health program. In the last analysis they are: (1) to teach every child what to eat and why, (2) to teach every child how to rest and when, (3) to teach every child how to use and care for the body and why, (4) to get every child to put these teachings into practice and to realize that these three are factors essential to good health.

Unfortunately, in many school systems the need for health teaching for all children is not recognized, and it is only the undernourished child who gets attention. This is probably due to the fact that after the war when much thought was concentrated on undernutrition, definite standards of measuring this were announced. Leading pediatricians stated that 10 per cent underweight for height indicated a condition of undernourishment. An impetus for weight surveys was created by the distribution from the Bureau of Education of the height and weight tables prepared by Dr. Wood. These surveys revealed the fact that about 20 per cent of the school children were 10 per cent or more underweight for height and about 13 per cent were borderline cases. Organizations devoted to child hygiene, impressed with the significance of these surveys, sought methods for the correction of malnutrition, and nutrition classes for underweight children became widely advertised as a solution to the problem.

From the standpoint of finance, a nutrition program which provides instruction for and reaches only the 10 per cent or more undernourished children, is

very expensive. If in a certain city there are ten thousand school children, with the usual percentage of underweight, there would be two thousand requiring special attention. It has been found from experience that one hundred children are all one nutrition worker can take care of satisfactorily, and consequently in such a case twenty nutrition workers would be required to adequately meet this situation. No school organization would be able to consider such an expense, especially when only 20 per cent of the children were being cared for.

There are other objections mentioned to nutrition instruction for the few. The nutrition class is usually held after school hours which means that some of the children who need to be out at the end of a long day at school are kept in. To be sure, this is only for one hour a week, but even that may be one hour too much. There are, however, many children who simply run the streets as soon as school is out, and one hour of health teaching a week after school would certainly do them more good than harm.

Some people also question the desirability of the spirit of competition which prevails in the nutrition class, especially when there are children who are physically handicapped. A certain amount of the competitive spirit is most desirable and a wise, tactful nutrition worker, I believe, can control the attitude of the class in such a case. The nutrition class method in many cases has certainly meant that more intensive work has been done, and it has met a real need. From the standpoint of a school program, however, its costliness would make it an impracticable method of attacking the nutrition problem and it should be regarded as only a temporary expedient or an auxiliary measure.

A program of universal health instruction would mean a systematic teaching of proper food and health habits in all the grades from the kindergarten through high school. Many large school systems to-day have the essentials for such a program. Medical inspection has been established in many communities so that children are examined at least once a year and all physical defects noted. Scales for weighing and measuring children have been installed in many schools.

School nursing service has become more prevalent, and the nurse has proved her value in the school health program through her ability to get the coöperation of the parents in having the physical defects removed. The oral hygienist and the school dentist have come to take their place in the school community. The physical training teachers are emphasizing the importance of good posture, and in their corrective work are helping to alleviate the ills resulting from poor posture. The home economic teachers are teaching in the upper grades and high schools the proper selection and preparation of foods and the relation of food to bodily health. Many schools have the mid-morning milk service, and hot noon lunches. In spite of all these agencies, however, the health work in many schools has not progressed very far. This is due chiefly to a lack of training on the part of the teachers in general health education and especially nutrition. This means that the normal schools and other teacher-training institutions must provide instruction in this before the teachers will be competent to handle it.

The question frequently is raised as to what part the nurse shall play in the health teaching program. Shall she or the teacher do the actual teaching? Personally, I believe that the teacher should do it. She has the teaching viewpoint which her training has given her, which viewpoint the nurse does not have. She has daily contact with the children, which the nurse has not. The nurse, however, is invaluable in the health program. It is she who makes the contact with the home and enlists the interest of the parents in helping to clear up the physical defects, and in helping to emphasize the health

points the teacher has made. The school nurses, however, like the teachers, need more information in health education and nutrition. These must be included in their training course.

Many school systems have tried the scheme of health instruction for every child with great success. I shall cite specifically two examples although many others could be mentioned. The work in Newton is well known about Boston. Three years ago, in September, a weight survey of the school children of Newton showed that about one-fourth of them were 10 per cent or more underweight for height. Beginning at that time, health teaching was introduced into the school work. This introduction was so gradual that it is hard to tell just how it was done but to-day, after three years, health teaching permeates the whole school curriculum. Instruction is given in the hygiene, physiology, home economics and physical training courses concerning the relation of the proper food and health habits to bodily vigor. The Assistant Superintendent of Schools gives each fall a short course in health teaching to the teachers and a trained nutrition worker gives instruction in the food requirements and importance of foods. All sorts of devices such as posters, health maps, etc., have been worked out in the lower grades to interest the children in their health. The health teaching has been correlated in every possible way with the other studies.

In addition to the general health teaching in the schools five special health or nutrition classes were conducted once a week for some of the 10 per cent or more underweight children. This seemed a valuable auxiliary to the general health teaching in the school. As a result of this work, according to the reports of parents and teachers, the food and health habits of the children have been greatly improved and a marked improvement in physical well-being has been noted. These results have been accomplished by the splendid coöperation of all the teachers and other health agents.

In Auburn, N. Y., in 1921, a supervisor of nutrition was appointed in the schools. A survey made in September, 1921, of the school children revealed that 23 per cent were 10 per cent or more underweight for height. Definite instruction in nutrition was given to the teachers by the nutrition supervisor. The teachers in turn translated this in terms which the children could comprehend and incorporated it in the daily school work, and the health teaching was correlated with as many other subjects as possible. The weights taken three times a year during the next two years show the following per cents of underweight:

September, 1921	23 per cent
September, 1922	19 per cent
January, 1922	11 per cent
January, 1923	9 per cent
June, 1922	12 per cent
June, 1923	10 per cent

This shows what coöperation will accomplish. I wish to state here that gain in weight was not the sole criterion used in either of these school systems to judge the value of the work, but the physical examinations revealed improved body health as manifested by better color, keener mental activity and greater physical activity, etc.

In both of these school systems the mid-morning milk service is carried on. The serving of milk is undoubtedly a very important factor in a successful school nutrition program. In a recent survey made by the New England Food and Dairy Council of the milk service in schools throughout the country, this fact was brought out: that children drinking milk regularly made very noticeable gains and great improvement in physical health.

School lunches are also now recognized as an essential feature of the best educational practice because they pay for themselves many times over. They not only make the children healthier but they make them take more interest in their studies, make them less restless and easier to

manage, and raise the general average of scholarship.

If lunches are to be served in the schools they ought, however, be made a part of the school curriculum and expenses for equipment and overhead should be met by public funds appropriated for that purpose but the food sold at cost to the children.

In conclusion, an ideal well-rounded school health program would include nutrition instruction; that is, not just the kinds of food but the nutritive requirement for every child from kindergarten through high school. To make this possible, the following agents are desirable:

1. A superintendent thoroughly aroused to the scope and value of nutrition work.
2. A medical director for the whole health program with a good knowledge of nutrition.
3. A corps of interested teachers.
4. A trained nutrition worker to instruct the teachers in their own and the children's nutritive requirement and also, to give attention to those children 10 per cent or more underweight.
5. A school nurse to make home visits and do follow-up work.
6. An oral hygienist to detect oral defects and help remove bad mouth conditions.
7. A physical education teacher to give necessary corrective work.
8. The mid-morning milk service and hot lunch for children who must stay at school during the noon hours.
9. A correlation and putting into practice of the work of related departments such as hygiene, physiology, physical education, home economics, and medical inspection in order to bring each child up to the highest standard of efficiency. More of the medical inspectors might visit the school lunch to see what kinds of food are being served. More of the home economics teachers might use the school lunch as a teaching point as to the proper kind and selection of food. The physical education teachers in coöperating with the home economics teachers might lay more stress on the need of a properly nourished body before corrective work is started.

All these agents must work together in order that the training and experience of each may supplement that of the others, for it is only in this way that effective and adequate health service can be rendered.

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Never, never address mail to "City."—This is the plea and warning of the Post Office Department. If a mistake is made in handling mail, make it easy for the postal service to correct one group of errors by always giving both city and state.

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The "clinic" idea is spreading.—Johns Hopkins held a clinic on health education printed matter a few weeks ago as part of a course on publicity and administration. Representatives of the Toronto and Ontario Boards of Health and the Canadian Red Cross met the editor of the health education department of this JOURNAL in an informal clinic in January. The Hartford Social Workers' Club and the Family Welfare Division of the Pennsylvania Conference of Social Work also report recently held printed matter and publicity clinics. Reprints of "The Clinic on Printed Matter," from the January, 1924, JOURNAL, will be sent free.

Sex Education in 21 "points."—"The established facts and principles and demonstrated results of sex education as 'points' of which there are more than the famous 'fourteen'."—The Established Points in Social Hygiene Education, 1905-1924, by Maurice A. Bigelow, *Journal of Social Hygiene*, 10:2-11, (Jan.) 1924.

✚

Do you cultivate the weighing habit?—Have you scales near the entrance to a clinic, dispensary or office, which any one may use? Do you encourage its use by signs or other publicity? Are there height and weight tables posted for ready reference by the users of the scales? If so, please tell the editor of this JOURNAL. Incidentally, have health workers taken any steps to see that scales in public places are accurate?

STUDIES ON THE CHEMICAL CHANGES OCCURRING IN A SPRINKLING FILTER*

F. LESLIE CAMPBELL, B.S. IN CHEM. ENG., AND WILLEM RUDOLFS, PH.D.

THE biological purification of sewage has been carried on for years without adequate research for a thorough knowledge of the activities and changes taking place in processes used. Quicker and surer progress could be made if fundamental knowledge were available on the biology and biochemistry of sewage disposal.

For two years investigations have been carried on in the sewage substation, joint project of the New Jersey Agricultural Experiment Station and the New Jersey State Department of Health, on the annual cycle of biochemical changes occurring in a sprinkling filter. The sewage disposal plant at Plainfield, North Plainfield, and Dunellen, N. J., has been used to carry on these studies. This plant treats from three to four million gallons of domestic sewage a day from a population of 40,000. The sprinkling filters comprise an area of 1.78 acres and are 6 ft. deep, made up of crushed stones which rest on half tile drains. Part of the experimental results of the past year are presented in this paper.

Experimental results.—Samples were taken at frequent intervals at 3 levels of the beds, one foot, three feet, and five feet deep, with the aid of trough-like pipes driven into the body of the beds. The levels are indicated in the table and in the figures as 1, 2 and 3.

A sample of sewage drawn from a particular level of a sprinkling filter bed does not necessarily represent the average chemical condition of the sewage at that level. Difference in volume of sewage delivered per spray at the place of sampling causes differences in its chemical constitution. Sewage which flows more slowly over active film surfaces with greater surface contact undergoes greater chemical change than a larger volume flowing more rapidly. As a rule greater chemical change was found in smaller samples (Fig. 1).

Regardless of the amount of solids which tend to fill and choke the voids of a bed, the full charge of a dosing tank leaves the beds after every spray, except before the sloughs (the time when the accumulated solids pass out in large quantities into the effluent), when sewage comes on the bed slightly faster than it leaves, and a foot or two of sewage fills the bottom of the bed. When the bed is choked with solids before a slough it seems that channels must be formed through the stones to carry off so much liquid. Figure 1 shows the variations in volume collected per spray with the average 200 c.c. line (200 c.c. is the volume which would be collected if the distribution over the bed were uniform).

Region of the most effective nitrification in the bed.—If the amount of chemical change in a sample were inversely proportional to the volume of the sample, it would be possible to calculate correct chemical figures by the following proportion:

$$\frac{\text{Sample volume}}{\text{Constant average sample volume (200 c.c.)}} = \frac{\text{Correct chemical figure}}{\text{Observed chemical figure}}$$

This would furnish more accurate figures. In Table I some figures for NO_3–N were calculated in the above manner. The difference between NO_3–N (pipe 3) and NO_3–N (effluent), divided by NO_3–N (effluent) equals the percentage of total nitrification taking place in the bottom of the few inches between the level of the third pipe and the bottom. Five of these figures are over 90 per cent, and the ma-

* Paper No. 170 of the JOURNAL series, New Jersey Agricultural Experiment Station and New Jersey State Department of Health. Substation, Sewage Investigations.

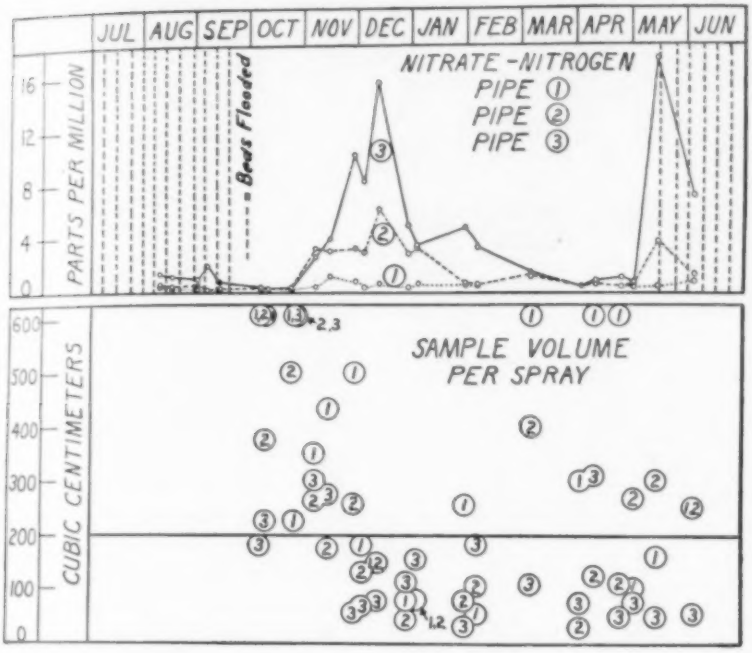

FIGURE 1

Nitrate formation in three different levels of the filter bed and variations in volume collected per spray.

jority are above 50 per cent. It is very probable, then, that throughout the whole year most of the nitrification takes place at the bottom of the bed. Most of the sewage flows down through the bed in channels between the stones, but at the bottom it must filter slowly through the old solids which collect there and the possibility of contact between liquid and solids is greatly increased. Buswell in an article on oxygen requirement in the activated sludge process, shows that proper circulation of sewage across stationary activated sludge is the ideal arrangement for greatest oxygen economy. Such a process seems to be taking place at the bottom of the sprinkling filter bed.

That the bulk of the down-flowing sewage does not filter through the film around the stones was shown in experiments on the effect of certain chemicals on the protozoa on the film. Solutions of many times the concentration necessary to kill protozoa exposed directly to them, had no effect on protozoa in the film. The film was not penetrated or only partially penetrated by the toxic ions in the time of the experiment, which was about that of a normal spray on the beds. The fact that turbidity of the liquid always decreases most between the level of pipe 3 and the effluent is an additional argument for filtration through solids at the bottom of the bed.

Besides impenetrability of the film, another factor must retard effective nitrification in the body of the bed. Solids freshly deposited on the film of the stones are not ready for the nitrification process, and the more rapidly Imhoff tank solids are deposited in the bed the less will be its efficiency in nitrification. The above interpretation indicates that the value of greater depth in the bed would be to provide additional surface on which solids may be deposited and slowly digested by the organisms in the film, while nitrate formation, which is always associated with a stable effluent in this type of purification, takes place chiefly at the bottom.

If nitrification is the most desirable chemical change in a sprinkling filter bed, the above analyses suggest to designers that depth of bed should depend on the concentration of solids which the bed must handle. It might also be possible to improve the design of the bottom of the bed so that more effective filtration of sewage through old solids might take place, and hence improve the efficiency of nitrification.

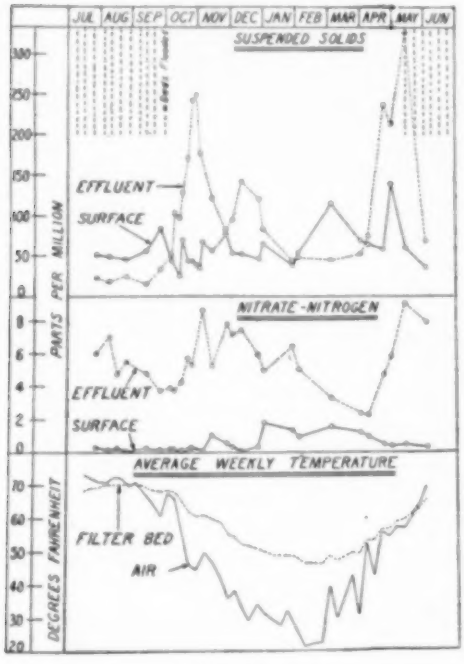

FIGURE 2

Relation between suspended solids entering and leaving the filter beds and nitrate formation.

NITRIFICATION AT THE BOTTOM OF THE SPRINKLING BED.

NO_3-N Effluent	NO_3-N Pipe 3	Difference	Nitrification at bottom
p.p.m.	(Corrected) p.p.m.	p.p.m.	Per cent
3.9	.27	3.6	92
3.7	.15	3.5	95
5.6	3.0	2.6	47
5.3	1.5	3.8	72
8.6	4.0	4.6	53
5.2	5.2	0.0	0
7.8	3.0	4.8	62
7.1	2.9	4.2	59
7.4	5.9	1.5	20
5.9	2.8	3.1	52
4.9	2.8	2.1	43
6.4	.72	5.7	89
5.0	3.0	2.0	40
3.2	.74	2.5	78
2.3	.15	2.1	91
2.2	1.4	.8	36
4.6	.27	4.3	93
5.8	.27	5.5	95
9.0	4.2	4.8	53
7.8	2.0	5.8	74

Cycle of nitrification.— Suspended solids are thrown upon the beds at a fairly constant rate throughout the year, but do not leave the beds at a constant rate (Fig. 2). There are two periods of the year in which suspended solids in the effluent reach high levels.

Nitrification in the beds is not the same throughout the year. It reached its lowest ebb at the beginning of spring (Fig. 2) when the beds are loaded with solids. At that time practically all of the slight nitrification takes place at the bottom. During the removal and passing out of the solids conditions become more favorable for nitrification in the body of the bed on the old loosened solids. The active surface, which before the passing out of the solid material was only at the bottom of the bed, extends during the process of removal up into the middle of the bed. The top of the bed never adds nitrates to the effluent, probably because Imhoff tank solids are always deposited there and the physical or chemical state of these solids is not right for nitrification.

Weekly flooding of the beds during the summer months to kill Psychoda fly larvæ, reduces NO_3–N in the effluent to some extent. When flooding is stopped in September NO_3–N rises again for a short time until colder weather and new solids push NO_3–N down to its lowest level at the beginning of spring.

Cycle of denitrification.—From all observations it seems that denitrification is taking place to a greater or less extent continuously and simultaneously with nitrification. However, it becomes apparent only when it exceeds nitrification. Denitrification exceeds nitrification in the upper parts of the bed in the spring just before the accumulated solids pass out.

The NO_3–N content of the liquid is at that time less in the first level than the NO_3–N in the sewage thrown on the bed. Because of the different effects of sample-volume all available figures cannot be calculated to a correct basis by one method, but in spite of sample-volume errors, the observed data plotted in Fig. 1, shows the magnitude of the variations in nitrate nitrogen from October to June in the three levels of the bed. To determine the probable error of any observation, the sample-volumes shown in this figure should be taken into account.

Cycle of ammonia removal.—Practically all nitrites and nitrates in the effluent are formed in the bed, while the ammonia in the effluent is the sum of the ammonia originally thrown on the bed, and of the ammonia produced in the bed. Most of the ammonia removal seems to take place in the level of highest nitrification. This removal is quite noticeable during the winter, but during the remainder of the year it seems to be obscured by an increasing amount of ammonia formed in the bed.

Influence of temperature.—The mechanism and rate of film removal will be the subject of another paper and the relation of temperature to this phenomenon and nitrate formation treated more in detail.

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HOUSING PROBLEMS IN PHILADELPHIA

GEORGE H. SHAW

Chief, Division Housing and Sanitation, Philadelphia, Pa.

Read before the Sanitary Engineering Section of the American Public Health Association at the Fifty-second Annual Meeting at Boston, Massachusetts, October 10, 1923.

WHEN William Penn founded Philadelphia in 1682 it would have been difficult to vizualize the teeming city of two million inhabitants that now occupies the site of the "Greene Towne" he founded. Philadelphia is known as the "City of Homes" and this well earned reputation is due in part to conditions that made it possible for the small wage earner to have a home of his own. These conditions have changed due largely to the rapid growth of the city and the high cost of building and Philadelphia, like other large cities, is now confronted with serious housing problems.

Compared with other American cities, Philadelphia is an old city and it has inherited conditions not commonly found in younger cities. Among these may be mentioned houses on narrow courts from which sufficient sunlight and ventilation is excluded; houses built years ago and provided with privy vaults; houses without modern inside water supply fixtures and dependent upon old time yard hydrants, and houses located on streets still unprovided with sewers.

To improve such conditions the Act of Assembly of June 11, 1915, was passed, and the Division of Housing and Sanitation was created. Its functions include housing regulation, securing the correction of insanitary conditions and the regulation of plumbing installations in the city.

Briefly stated, the Act provides for the regulation of tenements, rooming houses, two-family houses and dwellings, and requires that all plans for new buildings and buildings to be converted into such occupancy be submitted to the Division for approval; that tenements have 20 per cent of lot as open space, which requirement is reduced to 10 per cent on corners and in the case of tenements bounded by three streets, the entire area may be occupied. Every room used for living purposes must have a window opening to the outer air and no such room may have a floor area of less than 70 square feet except in the case of kitchens, kitch-

enettes, bath rooms, laundries and water closet compartments. All houses must be connected to the sewer, modern toilet facilities provided and inside water introduced. Such houses must be kept in good repair and in a sanitary condition. For the enforcement of these provisions a force of sanitary, housing and plumbing inspectors is provided.

The inspections made by the Division under this Act have frequently disclosed houses in a dilapitated condition and unfit for human occupancy, some of them occupied and others vacant. The law provides that such buildings may be declared unfit for human habitation and their use for living purposes forbidden. It has been necessary to resort to such action in many cases. Such buildings, often remain vacant and a menace to the neighborhood, and occupy space that should have upon it a home to house a worker and his family. These buildings are usually found in sections of the city where public utilities have been provided, streets paved, water, gas and electricity introduced, and make no return to their owner or to the community. Happily, however, in some cases these much needed houses are not permitted to stand idle for public spirited persons, and those who have found it profitable, have come forward and rehabilitated them and provided homes for worthy families.

The proper adaptation of large old time dwellings for present day uses is an important phase of the Philadelphia housing problem. Many former homes of wealthy owners whose descendants have long since removed to other sections of the city or to suburban homes, are to be found in the older sections of the city. These buildings, dating back to Colonial and Revolutionary periods, and in many cases in poor state of repair, often house several families. The writer, while making inspections, has admired many a fine doorway or wainscoting in what may have been the home of a Colonial Governor or merchant of the city. These houses now are the homes of families in poor circumstances who are more concerned with obtaining the barest necessities of food and shelter than with appreciation of fine architecture. They are usually of generous size and each one capable of being converted into attractive low priced homes for small families. Very rarely, however, are they so converted, the owners preferring to hold the property for a hoped-for increase in value and desiring to maintain them with the minimum expenditure for a small rental return. Conversion of such buildings in accordance with good housing standards will eliminate a moral and physical menace to the community and supply housing for a very considerable number of families.

The burden of maintaining good housing conditions in Philadelphia has been further augmented during the past year by the negro migration situation. It is estimated that during the past year at least 10,000 negroes have come to the city to furnish the additional workers needed to meet the demands of industries. They have come from rural districts, unaccustomed to city life and, for lack of a better place, have crowded into certain sections of the city. Sporadic cases of smallpox have been found in such centers but, fortunately, due to prompt action there has been no spread of the disease. The solution of the problem of providing houses for these newcomers and preventing overcrowding has been vigorously worked upon by a committee appointed to cope with the situation and improvement effected.

The effect of insufficient housing is not confined alone to the low wage earning class and families in poor circumstances, but is generally felt. This is due to the failure of new building to keep pace with the growth of the city. Each year the average growth is 30,000 which means that housing for at least 6,000 families is needed. Moreover, there is a yearly loss from houses that are torn down for pub-

be improvements, such as parks, public buildings or for industrial buildings. There is also a large accumulated shortage from previous years so that it appears that the housing shortage will continue for a considerable period. This housing shortage and the attendant high rentals have forced many families to occupy unsuitable houses or give up housekeeping altogether and become roomers.

The outstanding housing problem and the one that calls for early solution is "How are proper homes for the low wage earners and families in poor circumstances to be provided?" There is a very acute need for homes for such families that will rent for less than $30.00 per month, and a survey recently made by the Philadelphia Housing Association shows that no houses are being built that can be rented at that figure. Living quarters which are rented within the above range are for the most part of the type of building already described, in poor repair, unsuitable for homes and available at low rental only because the owner does not wish to spend money for improvements, or because he is holding the properties for a rise in the value of the ground. Such families are being left to shift for themselves and no provision made for them in the building program. Suitable homes for such families are necessary for the good of the community; to arrest the spread of disease and moral degeneration, and for the industrial progress of the city.

As a solution of this problem a large number of homes were built with public funds in England after the war, but the writer believes that private interest can be enlisted as has already been done in a small way in this city. At a recent meeting of those interested in housing betterment it was urged that each one who had money to invest should select an unfit house of the type above described, improve it and make it fit for a family to live in, and rent it at a price that would give but a small financial return. If public interest can be raised in this practical philanthropy of improving unfit houses and building new ones for low rental, either by individual or collective effort, it will go a long way toward solving our most serious housing problems.

In conclusion, more homes for all classes and particularly for the low wage-earning class are vitally needed. To supply them, many unoccupied and unsuitable houses may be rehabilitated and converted into good homes, but in addition, a broad and comprehensive program of new home building is needed. The lag in providing new homes to keep pace with the growth of the city is a serious matter and if the industrial progress of the city and the health and well being of its residents are to be maintained, these problems must be met in a wise and effective manner.

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Water Works Distribution Systems.—Principal features of various parts of a system and the design and maintenance of water distribution systems is discussed.—W. E. Macdonald, *Canadian Eng.*, 46:306, (Mar. 4), 1924. A. W. B.

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New Filtration Plant for Border Cities.—Water purification plant consisting of coagulating basin, filter beds and equipment, clear water reservoir, pumping station, etc., costing about $800,000 to be completed in about twelve months will have a capacity of twenty million gallons per day and will serve seven municipalities.—William Storrie, *Canadian Eng.*, 46:315, (Mar. 11) 1924. A. W. B.

Some Ontario Water Treatment Problems.—Waters containing formyl cellulose, obtained in the conversion of wood fiber into peat, lignite and coal, border between acidity and alkalinity and have a corrosive action on iron, zinc or lead pipes. Oxygen is readily taken up from permanganate by such a water which when distilled shows a volatile acid with characteristics of formic acid. When tretaed with lime a yellow deposit settles out, oxygen consumed value drops and on distillation no volatile acid is evolved. This appears to offer a possible method of treating this type of water. Characteristics of water at Chatham, Richmond Hill, Forest and in Lake Ontario are discussed.—A. V. Delaporte, *Canadian Eng.*, 46:316, (Mar. 11) 1924. A. W. B.

A STUDY OF THE INCIDENCE, MORTALITY AND FATALITY OF DIPHTHERIA

W. J. V. Deacon, M.D., Fellow A. P. H. A.

Director of the Bureau of Communicable Diseases and Vital Statistics, State Department of Health, Lansing, Michigan

Read before the Sanitary Engineering Section of the American Public Health Association at the Fifty-second Annual Meeting at Boston, Massachusetts, October 11, 1923.

Diphtheria is a disease of childhood.

Seventy per cent of all cases and ninety per cent of all deaths occur under fifteen years of age.

More boys than girls and more women than men have diphtheria.

The fatality rate is higher for males than for females.

ALMOST exhaustive statistical study of diphtheria was presented to this Association by Crum in 1917.[1] Aside from this study, modern literature contains but little statistical information on the subject of diphtheria. Further, the fact that contemporary methods of prevention by immunization makes statistical data of increased importance, emphasizes this as a study of value at this time.

This study of diphtheria is based on 31,028 cases and 2,458 deaths reported to the Michigan Department of Health. We believe that this number is great enough to eliminate accidental variations and that the findings may be regarded as illustrative of the facts.

One-half of all cases are less than nine years of age, the median being found at eight years and eleven months. Among males one-half of the cases occur at seven years and eleven months, while in females one-half of the cases occur at nine years and ten months.

Quite contrary is the fact that one-half of all deaths occur at four years and eight months and among males at even four years and females at four years and ten months.

The highest single year of age for all cases is the sixth and the highest single year for deaths is the third. Among males the greatest number of cases occur in the sixth year and of deaths in the second. Among females the greatest number of cases is in the sixth year and of deaths in the third year.

The group under one year of age gives only .7 per cent of the cases but furnishes 5½ per cent of the deaths. This group shows the enormous fatality rate of 61.9 per cent. This fatality rate is reduced to 34.7 per cent for the one-year group and to 21.4 per cent for the two-year group.

From the illustration, Fig. 1, it will be observed that 46.35 per cent of the male cases furnished 51.3 per cent of the deaths and that 53.65 per cent of the female cases furnished 48.7 per cent of the deaths.

The fatality rate being based on the relation of cases to deaths is necessarily dependent on the efficiency of case reporting. Diphtheria is well reported, as a rule, but no office secures notice of all cases. Therefore, the fatality rate must appear higher than it actually is. A review of literature indicates that in actual hospital practice, the fatality rate, based only on cases diagnosed in hospitals, runs from 7 to 10 per cent. With this in mind, the fact that a fatality rate of less than 8 per cent is found in Michigan would indicate that a very fair proportion of

1. A Statistical Study of Diphtheria, by Frederick S. Crum, Ph.D., American Journal of Public Health, Vol. 7, No. 5, May, 1917.

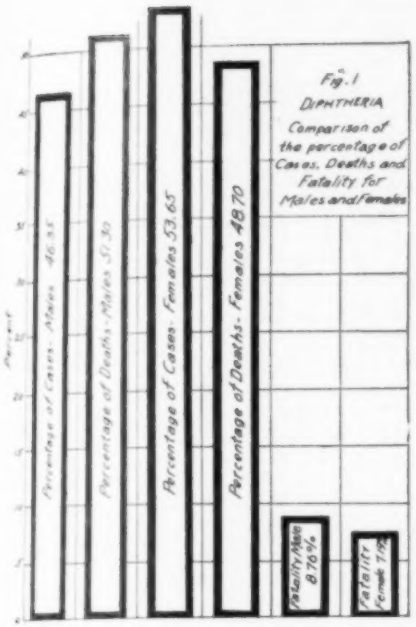


Fig. 1
DIPHTHERIA
Comparison of the percentage of Cases, Deaths and Fatality for Males and Females
Percentage of Cases - Males 46.35
Percentage of Deaths - Males 51.30
Percentage of Cases - Females 53.65
Percentage of Deaths - Females 48.70
Fatality Male 8.76%
Fatality Female 7.19%

cases are reported. The fatality rate for both sexes is 7.92 per cent; for males 8.76 per cent and for females 7.19 per cent.

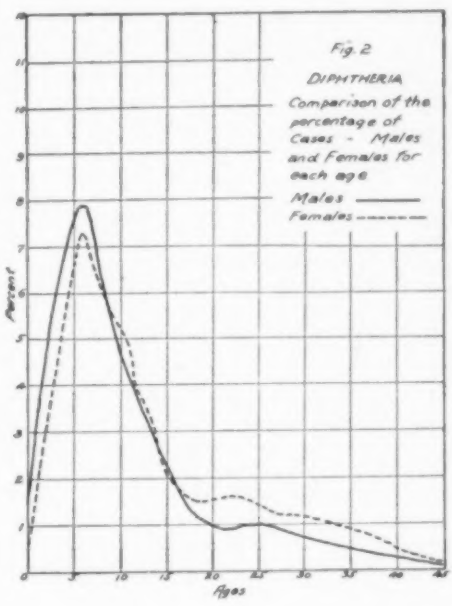
The fact that the larger percentage of cases is among girls corresponds with the findings of Dr. Crum. In his paper he quotes from Thorne as follows:

> Sex appears to have some slight influence in determining a liability to the disease although it is not well marked. We find that more females die from the disease than males but I have thought that this arises mainly from the fact that females are more exposed to infection than males. Little girls, when they are sick, are not nursed by little boys, but little boys are often nursed by little girls, and this care for the sick by females holds good in adult life.

It does not appear, however, that our conclusions agree in the case of death, as it is found that the percentage of deaths of females is somewhat lower than the males. This higher fatality rate for males is not so easy to explain in view of the fact that the larger percentage of death occurs under five years, a period when the boy, as well as the girl, is usually confined rather closely to the home. The fact that the female is biologically considered to be the stronger sex at this age may partially explain the matter.

In Fig. 2 will be found a comparison of the number of cases by sex for each age. It will be noted that up to age eight the number of male cases is considerably above the female. From eight to sixteen years the lines are not far apart, but from sixteen years the females are continuously higher than the males.

Attention is invited to the female curve between twenty and twenty-five years. This may be accounted for, at least in a measure, by the cases of young mothers who are infected by coming into close contact with the sick child while nursing. This rise does not appear, however, in the deaths which are illustrated in Fig. 3. This chart coincides very well with Fig. 2, except that there is a wider divergence between the ages of five and eleven years. These two charts emphasize the statement made before, that diphtheria is a disease of early childhood.

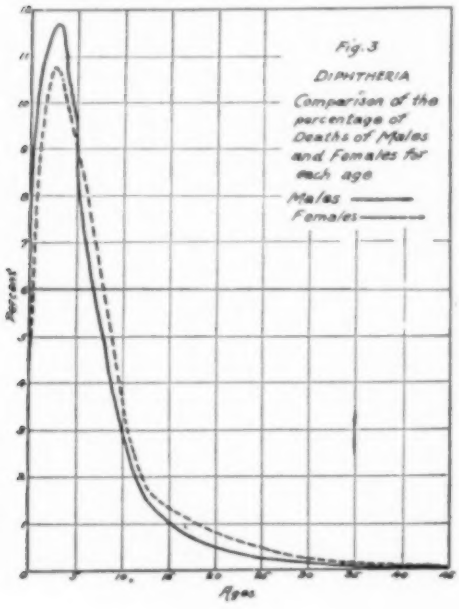


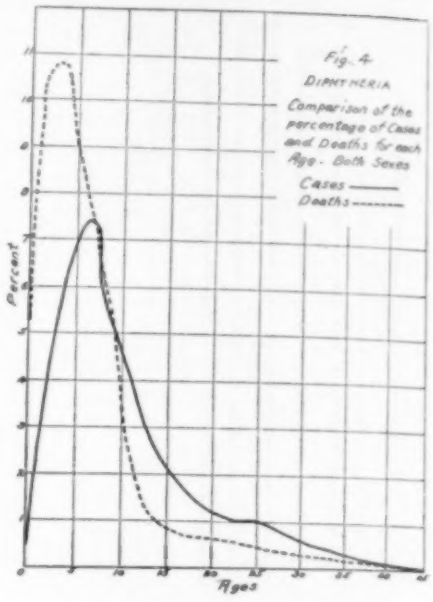
A comparison by percentage of cases and deaths at each age for both sexes is shown in Fig. 4. It is apparent that adults have the disease, but the fatality rate is very low.

The enormous divergence between the groups below eight years of age is a striking illustration of the low resistance of this disease in young children and is an argument for greater public health effort in the preschool group.

In Fig. 5 is shown cumulative curves with the percentage of cases of diphtheria and deaths for males and females at each age. It is important to note in the case curves that at the age of five about 29 per cent of the cases have occurred among the males and only about 20 per cent among the females. At ten years of age, 60 per cent among the males and 50 per cent among the females; at fifteen years of age, 77 per cent among the males and 65 per cent among the females.

In the comparison of the deaths it will be observed that at the age of five, 61 per cent of the male deaths have occurred and 52 per cent of the females; at ten years of age 87 per cent of the males and 80 per cent of the females; at fifteen



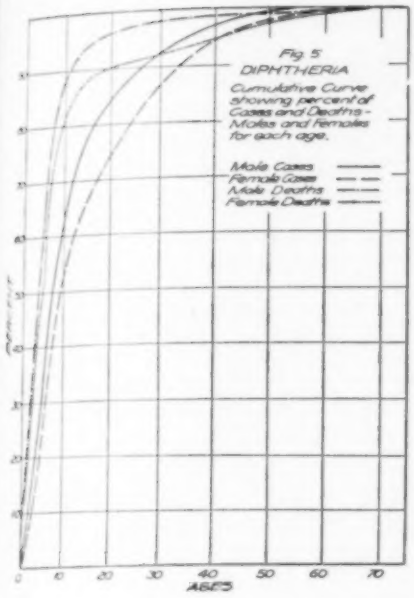


years of age, 94 per cent of the males and 88 per cent of the females.

In the comparison of the curves showing the cases and deaths, it is interesting to note that in the deaths at the age of five, 57 per cent of the deaths have occurred, whereas only 24 per cent of the cases have occurred. At age ten 84 per cent of the deaths and 55 per cent of the cases have occurred. At age fifteen, 91 per cent of the deaths and 71 per cent of the cases.

Perhaps the most striking illustration will be found in Fig 6, which shows the comparison of the fatality rate, namely, the per cent of deaths to cases for each age. As previously stated, 61.9 per cent is the fatality rate for the group under one year of age; for age one, 34.7 per cent; for age two, 21.4 per cent; for age three, 16.4 per cent; for age four, 14.1 per cent.

We read a good deal about the inherited immunity of young babies from mothers, but it must be evident that this is not a very great protection because we find that 46 per cent of all deaths under one year are less than six months of age and more than that, the sick baby does not in many cases get medical attention



early enough or diagnosis is delayed. Examination of these figures must show that the resistance of the child under one year is so low that medical skill can do but little. It is more probable that this supposed immunization is simply the fact that the very young child, particularly if breast-fed, is so protected that he does not come in contact with the infection. The fact that this curve descends so abruptly is an evidence of greater resistance gained with age and of the fact, possibly, that the serious illness of the child is more easily recognized.

That the use of diphtheria antitoxin has enormously decreased the death rate from this disease in spite of continued or increased incidence is so well shown by modern literature, it must appear unnecessary to present any argument for its use at this time. But it should be observed that there has not been a marked decrease during the period that antitoxin has been in general use. In other words, our fatality rates are apparently almost at a standstill. Anyone who is actively in touch with conditions must be amazed at the lack of common knowledge of the proper use of antitoxin among the medical profession. Even in these days of modern practice, there are still many physicians who fear the use of antitoxin and employ it only when all other measures fail. Consequently, there is a very definite loss in this method of defense, due to the fact that the use of antitoxin is so long delayed, and when suddenly relied upon, it is most often too late. Then, even great quantities will not save the patient.

In spite of all that has been written on the subject during the past few years, it frequently happens that health officers will call the department and state that they have a carrier who has never had diphtheria before but now has a positive throat. These often state, "We have given five, ten or twenty thousand units of antitoxin but with no effect on the cultures. What will we do next?" Or the statement comes in that a case of diphtheria has started in this or that school and every child has been treated with toxin-antitoxin. Incidents of this kind are without end. The one outstanding lesson to be derived is that our educational efforts must include the medical profession as well as the public. Fur-

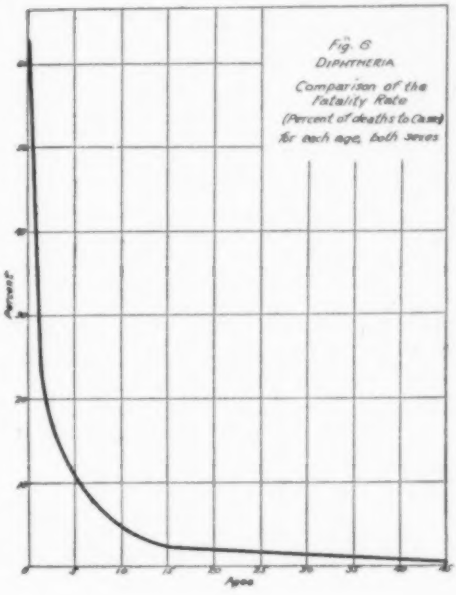
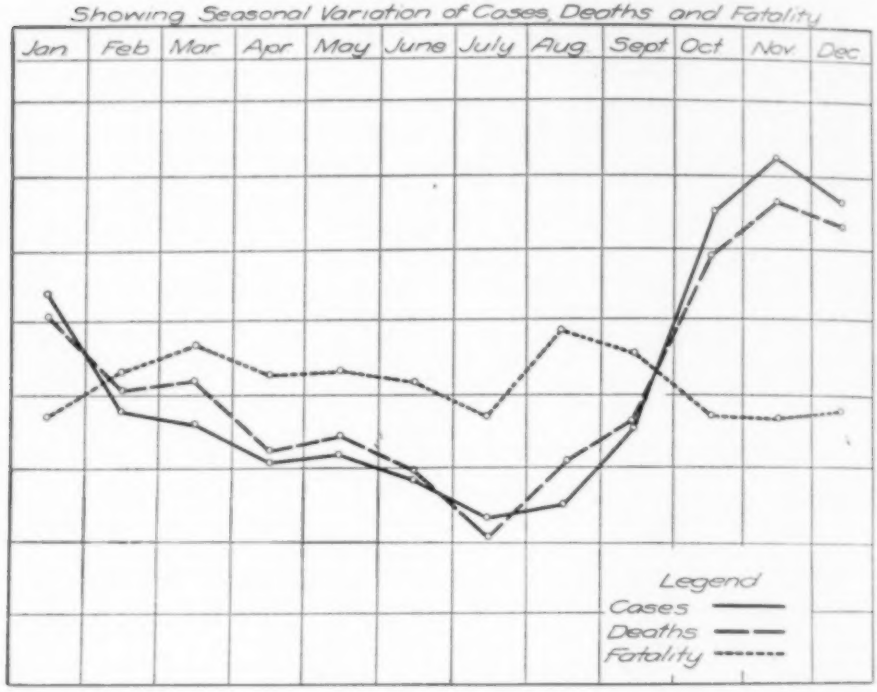


Fig 7.
DIPHTHERIA
Showing Seasonal Variation of Cases, Deaths and Fatality



ther, if real progress is to be made, it must be by the prevention of the disease through immunization. This holds, not for diphtheria alone, but for the other preventable illnesses as well.

Much creditable work has been accomplished in some of the cities through the immunization of school children. Park and Zingher, with a comprehensive article in the AMERICAN JOURNAL OF PUBLIC HEALTH for January, 1923, describe their efforts to reach the preschool group in New York City. The greater opportunity for reaching the mothers of young children through the visiting nurse service, which is afforded by a large city, will give a much more satisfactory result than is possible in rural districts or even small cities or villages without a whole-time health department.

No worth-while effort, however, should be delayed because of the difficulties they involve, and we are of the opinion that there is no more vital life-saving work before the public health authorities today than carrying forward the campaign of immunizing young children.

If toxin-antitoxin could be administered to every child at six months of age, diphtheria would disappear from our public health records in five years.

The seasonal variation is classical, showing a sharp rise in October shortly after the opening of schools, the congregation of children offering greater chances for infection. As shown in Fig. 7, the death curve follows the case curve quite closely throughout. The one exceptional thing in this chart is the fact that the highest fatality rate is found in August. It is evident from this that vacation contacts must be considered as important factors. Physicians and parents are not looking for diphtheria at this season, and it is probable that many cases are unrecognized or at least not diagnosed early enough to make the use of antitoxin effective.

THE ROLE OF HYDROGEN ION CONCENTRATION IN THE ACTION OF DYES ON BACTERIA*

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IN a recent number of this JOURNAL (1) the report of a study on the "Effect of Gentian Violet on the Viability of Some Water-Borne Bacteria" gave rise to the problem of determining why, when B. coli is growing in gentian violet broth, a heavy purple precipitate is produced, which in most cases removes all the color from the media. This precipitate might possibly be a decomposition product of the dye, or might be due to absorption of the dye by the bacteria and a gradual settling out of the latter since they no longer remain suspended. No precipitation occurred so long as the broth remained sterile, even after long incubation periods.

It has already been found (2) that a decided increase in the protein nitrogen fraction of the nitrogen content of media occurred upon bacterial growth, evidently an actual production of bacterial protein. That "proteins combine chemically with certain dyes" was suggested by T. B. Robertson (3) when he observed that the addition of proteins such as casein, gelatin and protamin to aqueous dye solutions altered the distribution of the dye between water and lipoid, and that this alteration is characteristic for each protein. Kligler (4) noted that as you increase the organic nitrogenous compounds in media the dye becomes less effective bacteriostatically. He says "the *reaction* of the medium *modifies* the specific action of the antiseptic, owing, probably, to an alteration in the bacterial cell." In 1921 Churchman had noted (5) that the addition of dead bacterial bodies to gentian violet media tended to inhibit the bacteriostatic action of the dye.

Since the organisms used (1) were all of the lactose fermenting type, which would cause the evolution of carbon dioxide and hydrogen during bacterial growth, an attempt was made to induce precipitation of the dye by bubbling CO_2 gas through gentian violet enrichment media (6) which contained as high as 2 per cent peptone and only 0.2 per cent lactose. This experiment was repeated with hydrogen both in molecular and nascent state, without formation of any precipitate. The introduction of washed bacterial growth, whose pH was about 7.6, brought about decolorization of the solutions after about one and a half hours of shaking.

Seven cultures, which had been previously isolated and classified as belonging to the water-borne lactose-fermenting organisms, were inoculated into two distinct sets of culture tubes. The tubes of set number 1 contained media consisting of 0.2 per cent lactose, 2 per cent peptone and 1:200,000 gentian violet. Those of set number 2 differed only in that they did not contain the 0.2 per cent lactose. The tubes were incubated at 37 degrees. After twenty-four hours incubation the tubes of set 1 (lactose broth) contained gas and three of the tubes showed a greater amount of precipitation than the corresponding tubes of set 2, due probably to the fact that the presence of sugar in these tubes permitted a more luxuriant growth. However, after forty-eight hours incubation all the tubes of set 2 contained a larger amount of precipitate, and after five days incubation all the tubes of this set save one had become completely decolorized and a heavy purplish black precipitate had settled to the bottom, while the tubes of set 1 showed only a light purplish precipitate and the media had remained a dark purple. In these latter tubes the maxi-

* From the Laboratory of Preventive Medicine and the Laboratory of Physical Chemistry.

mum decolorization did not amount to 50 per cent.

Less than twenty-four hours were required to show the first degree of precipitation. Table I gives an idea of the pH range for the tubes.

TABLE I

No. of Tubes	Set No.	Broth *	pH Range	Precipitate	Appearance of Liquid
6	2	g.v.—peptone	8.0–8.5	Purplish black	Colorless
6	1	g.v.—peptone—lactose	4.3–4.8	Light purple	Dark purple
1	2	g.v.—peptone	7.6	Purple	Faint purple
1	1	g.v.—peptone—lactose	5.0	Light purple	Dark purple

* All broths before incubation had a pH of 6.8.

The pH of both the peptone-lactose and the plain peptone broth, when they contained gentian violet as used above, was 6.5 before sterilization, and increased to 6.8 during the sterilization. The increase in pH is due lo the predominating influence of peptone hydrolysis into ammonia and like products during the sterilization as evidenced by the fact that a peptone broth containing neither lactose nor gentian violet had a pH of 6.75 before, and 7.2 after, sterilization, while one containing peptone and lactose but no gentian violet had the same values as the above g.v. broths used, *i.e.*, 6.5 increasing to 6.8 with sterilization. The single case of incomplete removal of dye is interesting and will be considered in the discussion.

Apparently the removal of the dye depends on the pH of the solution, and reaches a maximum in alkaline rather than in acid solution. This idea was qualitatively confirmed by the effect produced by small additions of acid and alkali to the above cultures. Decreasing the pH by addition of small amounts of acid to cultures from which the dye had been completely removed caused it to be reliberated, and the color distributed throughout the solution. Further additions of alkali caused, again, the complete removal of all color from the solutions.

DISCUSSION

The above experiments, it is thought, throw some light on certain unexplained observations which have been made from time to time. For example the non-specificity of any one dye is suggested by Churchman's observation (1921) that "it is impossible to make B. subtilis change its gentian positiveness without changing their Gram positiveness." It is also known quite generally that nonspore-forming Gram positive organisms are inhibited by gentian violet, while the corresponding Gram negative ones are not so affected but are quite susceptible to acid fuchsin. Basic fuchsin acts the same as gentian violet.

These experiments, together with such statements and many others, can all be easily explained on the basis of the concept that much of the behavior of bacteria is due to the chemistry of its protein content. Bacterial protein—or any protein—is, according to Loeb, an amphoteric substance. Such a substance is one which is capable of combining with either an acid or a base depending on conditions. When it is in a solution whose pH is greater than a certain value characteristic of that protein, *i.e.*, in a solution sufficiently alkaline, the protein will act as a weak acid and combine with any base present. When the acidity surpasses the above mentioned characteristic value, the protein acts as a weak base and will combine with acids present. The pH at which its characteristics change is termed the isoelectric point. This point does not come at true neutrality. A survey of the determinations made on the common proteins show that in all cases studied, except gliadin, this point is in acid solution, and in a large majority of cases at a pH of 5 or less.

Such a basic dye, then, as gentian violet or ordinary basic fuchsin, if it combines with the protein, should do so on the alkaline side of its isoelectric point. The amount of combination is a matter of

chemical equilibrium, and the amount of basic dye combined should increase with the alkalinity and decrease with the acidity. In this connection the apparent exception noted in Table I is quite interesting, and an important confirmation of the theory. Reference to the table will show that in every case where the pH reached 8 or more, the dye was completely removed. Where it reached only 7.6, though it was largely removed, the solution still retained a slight though distinct color. This led to the following experiment. Several tubes were made up, some containing peptone broth and some peptone-lactose broth. Equal amounts of gentian violet were added to each tube. Each tube was then buffered at a pH of 6.8, but they were buffered only slightly and to a varying extent in order that, after inoculation with B. aerogenes, the change in pH would take place at varying rates. After a few days incubation the tubes were centrifuged and the order of color intensity estimated in a colorimeter. Table II gives the differentiation noted, with the pH values of the liquids determined electrometrically.

TABLE II

Tube No.	Broth	pH	Remarks
1	No lactose	8.05	*No distinct coloration.*
2	No lactose	7.75*	The tubes are arranged in the order of increasing color intensity. The first tube, pH of 8.05, was the only one in which there was no distinct coloration. The tubes labeled "No lactose" contained 2 per cent peptone, the lactose broth contained, in addition to this, 0.2 per cent lactose.
3	No lactose	7.7*	
4	No lactose	7.2	
5	No lactose	7.0	
6	No lactose	6.85	
7	Lactose	6.7	
8	Lactose	6.25*	
9	Lactose	6.25*	
10	Lactose	5.2*	
11	Lactose	5.15*	
12	Lactose	4.8	*Greatest color intensity.*

*The tubes thus grouped together were indistinguishable as to color of liquid.

If the behavior of bacteria in any way depends on the behavior of their protein content, it should be possible to locate a point at which the bacterial protein no longer takes up basic dye such as gentian violet. It should, however, show increasing tendency to combine with an acid dye. Such a point one would not expect to be as definite as in the case of a single pure protein such as gelatin or casein, due to the complicated nature of bacterial structure, but the following simple experiment indicates that in the main the above theory is true. Equal amounts of dead bacterial growth were shaken with equal concentrations of gentian violet in solutions buffered between the pH limits of 2 and 5 in steps of about 0.3 of a unit. The tubes were allowed to stand for several hours. As one passed from the more acid to the more alkaline tubes, the color of the liquid, as was expected, became lighter. In the more acid tubes very little of the dye if any was removed, while in the tubes of higher pH more and more of the dye combined with the protein.

Moreover, the dye could be practically all washed out from the protein in the more acid solutions, but as the pH increased, less and less of it could be washed out with water. An acid wash, as might be expected, would, however, quickly liberate it.

Similar sets of tubes were prepared and the behavior of certain acid dyes noted under the same conditions. Acid fuchsin and ponceau were used. In both cases the gradation of color went in the opposite way to that with gentian violet. More color was taken from the more acid solutions.

The question might legitimately be raised as to whether change in pH alone might not precipitate the dye, without the aid of bacterial protein. The free acid of an acid dye should be liberated by addition of an acid to the solution of dye salt, and the free base of a basic dye by the addition of alkali; and, even though the dye salt may be quite soluble in water, the liberated free acid or base may not

be. Indeed, the addition of sufficient caustic alkali to a solution of gentian violet will cause complete precipitation of the free dye base and complete decolorization of the solution. Also, addition of sufficient hydrochloric acid to a solution of such an acid dye as eosin will cause its complete precipitation.

This question has been considered by the authors, but a study of the dyes used, under the experimental conditions obtaining, shows that such an alternative explanation is invalid. It happens that in the case of both acid dyes used, ponceau and acid fuchsin, the free dye acid is largely soluble since the addition of considerable concentrated hydrochloric acid to solutions of these dyes causes no precipitation. In the case of gentian violet it is true that *sufficient* increase in pH (*i.e.*, addition of sufficient caustic alkali) will completely remove the color. In the experiments carried out, however, the highest pH value reached was only 8.5. Several tubes containing gentian violet were prepared and buffered at a pH of about 9.4. No precipitation was noted in those tubes in which the dye was present in quantities of the order of magnitude employed in the broths. In cases where amounts of dye from one to two hundred times as great were added the formation of dark precipitate was noted after a time, but *under no circumstances* did anything approaching complete decolorization take place. The solubility of the material may be expected to be progressively decreased by increase of pH, but increasing this even to 9.4 yields a dye solution more concentrated than that of the freshly prepared broth.

SUMMARY

Experiments are described which indicate that the behavior of bacteria may be closely related to the chemistry of their protein content, regarding this protein as an ampholyte according to Loeb's theory of the character of proteins.

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A New Test for Bile Pigments in Urine, Bile and Blood Serum.—Urine Test. 0.5 c.c. of Obermayer's reagent is added to 5 c.c. of urine. If bile pigment is present, the color will appear at once as a deep green. If there is only a faint trace, the color will appear after standing a few minutes in warm water. In fact, the Obermayer indican test and this test can be performed in the same tube, for the indigo of the former is taken up by the chloroform. Bile Test: The bile is diluted to 100 c.c. and then 1 c.c. of this dilution to 10 c.c. and the test applied, the reaction is immediate. Serum Test: 4 c.c. of 95 per cent alcohol is added to 2 c.c. of serum to precipitate the proteins, and the mixture is centrifugalized. The clear supernatant fluid is withdrawn, and 0.5 c.c. of Obermayer's reagent is added. The green will appear after a few seconds, depending on the concentration of bile pigment present. Bilirubin alone produced the color with this reagent.—Robert Kapsinow, *J. A. M. A.*, 82:687, (Mar. 1) 1924. O. M. M.

Meningo-Encephalitic Lesions and Protozoan-Like Parasites in the Brains of Apparently Normal Laboratory Animals Employed for Experimentations.—The authors report lesions in mice similar to the brain lesions noted in rabbit by Bull in 1917 and Oliver in 1922. Out of 141 mice examined, 25 were found to have meningeal, peri-vascular, focal and subependymal lesions of the brain. Protozoan-like parasites were found in the brains of five of the mice. They were slightly curved rods 1.8-2 micron by 0.5-0.8 micron. They stained blue by Giemsa's method and pink with eosin and were somewhat resistant to decolorization by Gram's method. Microörganisms which appear to be of exactly the same kind have more recently been reported, also in association with meningo-encephalitic lesions in rabbits, in April 1923, by Doer and Zdansky, and in November 1923 by Levaditi, et al, who have introduced for them the term Encephalitozom Cuniculi.—E. V. Cowdry and F. M. Nicholson, *J. A. M. A.*, 82:545, (Feb. 16) 1924. M. C.

PRACTICAL USE OF THE BLOOD CULTURE IN PUBLIC HEALTH WORK*

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Read before the Laboratory Section of the American Public Health Association at the Fifty-second Annual Meeting at Boston, Massachusetts, October 8, 1923.

IN a previous publication[1] certain improvements in typhoid diagnosis for use in public health laboratories were suggested. The methods described by us at this time are still employed in our routine work for the city of Richmond. The physicians have become accustomed to the use of this method and submit satisfactory specimens. Out of the last 100 cultures, for example, only one was reported as unsatisfactory, while the work for some years, as shown in Table I, notes only 3.2 per cent unsatisfactory. This is better than our average on other types of specimens, perhaps because greater care is recognized as necessary in the collection of a blood culture.

In practically every specimen received the blood has been inoculated into bile and into bouillon media, and a tube of whole blood for the agglutination test has been included. But few cases of typhoid fever are now reported in the city without laboratory confirmation, by either a positive culture or an agglutination test. Our health officer and medical inspectors believe that we rarely get both of these tests negative in a case of true typhoid fever.

The value of using two media is shown in Table II. As stated in the previous publication,[2] organisms of the typhoid group very rarely grow in the bouillon bottle, while others, such as the streptococcus and pneumococcus, do not grow in the bile. The reason, perhaps, that the variety of organisms shown here is so large in proportion to the size of the series is that these two media let little if anything get by.

TABLE I

SUMMARY OF BLOOD CULTURES FROM THE CITY IN WHICH BOTH BILE AND BOUILLON WERE USED

	Number	Per cent
Positive	167	18.2
Negative	720	78.6
Unsatisfactory	29	3.2
Total	916	100.0

Positive cultures as follows:

142—Typhoid.
8—Streptococci.
5—Para-typhoid B.
3—Pneumococci.
1—B. coli.
1—Influenza bacillus.
1—Meningococcus.
1—B. fecalis alkaligenes.
1—Friedlander's bacillus.
2—Unidentified bacilli, resembling the para-typhoids.
1—Unidentified bacillus, resembling the influenza bacillus.
1—Unidentified, Gram-negative bacillus, hemolytic.

For state-wide work, however, where specimens come from a distance, and in nearly all cases by mail, an outfit containing two bottles of media and a test tube would be too cumbersome and also too expensive. Likewise the difficulties under which the rural physician must of necessity work should be considered. He will not take the trouble to put the blood into too many containers. Besides bouillon is easily contaminated and all organisms grow in it readily, so that it is not so satisfactory for general use as is bile. We therefore concluded that, all things considered, the best proposition would be to send out a single bottle of bile media. True, some of the organisms found, as recorded in Table I, would not grow in bile, but 85 per cent of the positive cultures were typhoid and 92 per cent of the typhoid-colon group. We have for the last three years supplied these simple one-bottle outfits for blood cultures, and the tube for agglutination has been furnished in a separate container. The results of this work are shown in Table II.

* From the Laboratories of the Virginia State Board of Health and the Richmond Health Bureau.

TABLE II

SUMMARY OF BLOOD CULTURES FROM THE STATE BILE MEDIUM ONLY USED, SPECIMENS BEING SHIPPED IN.

	Number	Per cent
Positive	70	33.3
Negative	131	62.4
Unsatisfactory	9	4.3
Total	210	100.0

Positive cultures as follows:
63—Typhoid.
5—B. coli.
1—Para-typhoid B.
1—Unidentified bacillus, having the cultural characteristics of B. Asiaticus (Castellani) (2)

The absence of B. para-typhosus A in all of our work has somewhat surprised us, and we wonder to what extent this is true in general. Large series of blood cultures from foreign countries[3] show it to be more prevalent than B. para-typhosus B., but general figures in this country are scarce. There are ample reports of special and unusual findings, but practically no large series of general cultures over a sufficient period of time. The number of B. coli cultures in our limited amount of rural work also surprised us.

When B. coli was first obtained, its pathogenic significance was doubted and contamination of the culture suspected. In the first case observed, a second culture was obtained for confirmation and a special study and report of the case made.[4] Later when other cases occurred, contamination was again suspected and a few tests were made to determine the likelihood of B. coli being present as a result of poor technique in collecting the blood. Twelve students and laboratory workers were selected at random and a swab rubbed thoroughly over the skin of the arm; another swab was rolled between the fingers. Cultures from these 24 swabs were all negative for B. coli. It was, therefore, concluded that B. coli was not apt to be present in pure culture unless actually in the blood. This conclusion has further been verified by similar cases of B. coli infection reported in the literature. These cases, clinically, all resembled typhoid fever.

Staphylococci, both albus and aureus, have frequently been found in blood cultures, but these organisms are also commonly found on the skin. Repeated requests have been made for second cultures in these cases without response. These findings have, therefore, not been reported or included in the tables. It is, however, very probable that staphylococci occur in the blood.

About three years ago we began making cultures from the clotted blood in suspicious cases where the agglutination test was negative. We referred to this in a previous article, but had not, at that time, kept a sufficiently complete record to enable us to give figures. An article from the New York State Laboratory[5] has since appeared calling attention to the value of this method as a routine procedure. Following this suggestion we begin in June, 1923, to culture all clots from agglutination tubes.

We have not used Gilbert's method, however, as ours had always proven satisfactory and seemed simpler. After drawing off the serum for agglutination the remaining blood is put into bile medium. No effort is made to break up the clot but there is a decided tendency for it to disintegrate in the bile. The bile culture is incubated and sub-cultures are made on Russell's double sugar medium. B. typhosus when present is usually in pure culture. If contamination is present Endo plates are made. The inhibiting effect of bile minimizes the annoyance caused by contaminations, and when followed up by plating on Endo medium makes it possible to isolate B. typhosus readily, even when both staphylococci and sporeforming bacilli are present. Forty-eight hours incubation of the bile culture is allowed before making a negative report. Positive results can usually be reported within the same time or less.

TABLE III.
SHOWING COMPARATIVE RESULTS OF AGGLUTINATION AND CLOT CULTURES.

Agglutination	Clot Cultures		Total
	Positive	Negative	
Positive	16	25	41
Negative	20	119	139
Total	36	144	180

Forty-one specimens were positive by the agglutination test; 20 specimens negative by agglutination gave a positive clot culture, thus adding 50 per cent to the efficiency of the examination. Only 16 of these specimens were positive by both tests. Therefore, for the laboratory diagnosis of typhoid fever whole blood should be insisted upon and both the agglutination test and the clot-culture made.

the rôle of chance, due to the small amount of blood used, might account for this. That is, it appears that the clot-culture is about as reliable in typhoid fever as is the regular blood culture, but where both are used, and consequently more blood is examined, the chances of positive results are increased. Of the 61 cultures negative by both cultural methods, 6 gave positive agglutination results.

TABLE IV.
COMPARING BLOOD CULTURES AND CULTURES MADE FROM CLOTTED BLOOD.

Blood Culture Direct into Bile	Cultures from Clots		Total
	Positive	Negative	
Positive	17	3	20
Negative	3	61	64
Total	20	64	84

We have for more than four years refused to make dried blood Widal tests in the city of Richmond. We hope that the time is approaching when we can take the same stand in our statewide work.

While we recognized the value of the clot culture we had always assumed that the true blood culture was far superior. To test the validity of this assumption comparative work was carried out in 84 cases.

Each cultural method disclosed 3 positive cultures not found by the other method. Seventeen specimens were positive by both cultural methods and 61 negative by both. It seems probable that

The mechanism by which the clot culture works has interested us greatly, but we have not yet approached the solution. We find that in nearly all instances the serum from a tube from which a positive clot-culture is obtained will prove highly bactericidal for B. typhosus. We have not succeeded in artificially reproducing the clot protection of B. typhosus.

CONCLUSIONS

For reliable laboratory diagnosis in typhoid fever and related infections, we recommend:

1. Where cultures do not need to be mailed:

(a) A blood culture be made, using both bouillon and bile media.
(b) A tube of whole blood be submitted and an agglutination test made from the serum and a culture from the clot.
(c) The more blood inoculated into these the better the chance for a positive result.

2. Where specimens have to be mailed and simplicity and economy are important:
Have whole blood submitted; use the serum for agglutination and the clot for a culture.

The second procedure lacks the completeness of the first, but it is a vast improvement over the dried drop Widal test. Nearly all physicians know how to get blood for a Wassermann test now, and getting whole blood for typhoid diagnosis is, of course, the same.

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WHAT'S NEW IN HEALTH EDUCATION

One session of the Health Education and Publicity Section of the American Public Health Association meeting in Boston, October, 1923, was largely devoted to a series of reports on new methods and new materials. The Chairman was Dr. H. E. Kleinschmidt of the Toledo Public Health Association.

POSSESSING THE LAND OF HEALTH

Introductory Remarks by the Chairman.—Two centuries ago the white population of the United States was practically confined to the Atlantic seaboard. The West was a wilderness—unknown, unoccupied and unused. A few venturesome explorers gradually penetrated into the vast expanse. Hardy pioneers followed in the narrow paths of the explorers and here and there staked out for civilization small areas of previously unoccupied land. Now and again the paths of the explorers and of the pioneers crossed and by coördinating their findings larger sections of the country were taken. In the course of time, ambitious emigrants, swayed by the pioneers who had spied out the land and declared it to be good, followed and established themselves. Communities sprang up, expanded and reached out until they joined other similar groups. To-day, the vast territory which was formerly a dead waste is possessed and occupied to the immense material benefit of mankind.

This is a picture of health progress of the present day. The masses generally are lazily content to accept things as they find them—satisfied to remain in the village of their birth. If an epidemic sweeps the land, it is meekly tolerated as a dispensation of Providence. If the average expectancy of human life happens to be 54 years this is accepted as a natural phenomenon controlled by immutable law. Unnecessary disease and premature death are endured with a fatalistic inertia. But restless researchers (an insignificant few) explore into the realm of the unknown. Slowly they pile fact upon fact until it is evident to them that if the people would but utilize these facts, would but occupy the newly discovered territory, life would be lengthened and broadened to the great profit of the people. But the research worker is notoriously deficient in the ability to

move the masses. His is the type of mind which is adapted to search out hidden truth and to follow it wherever it may lead, but not usually the kind which knows how to capitalize the new-found knowledge to the benefit of the people.

Here is the opportunity of the health educator and publicist. His function is two-fold. It is for him on the one hand to evaluate and appreciate the significance of the findings of the discoverer and, on the other, to adapt this knowledge practically and market it to the masses. He is the hardy pioneer, luring others to follow into new fields. He permits the research worker to show him the land and then goes back to persuade the people to possess that land.

Progress in medical research has been tremendous since Pasteur's time. Like Moses, Pasteur was privileged only to view the Promised Land, but we, his followers, are charged with the responsibility of capturing it. At the last meeting of this Association the conviction that the average span of life in the United States could be extended from its present 54 years to 70 years, if present medical knowledge were universally applied, was given official expression. We have about reached the limit of health progress through, shall we say, mechanical measures, such as sanitation and legislation. Holding the gains so made, we now shift a large measure of our attention to the education and persuasion of individuals. But so difficult is the task that the workers seek each other's company in order to share their humble scraps of experience and inspiration. We are assembled for the purpose of discovering and developing vehicles for transmitting knowledge already extant, to the people. We believe that at the present moment no other department of public health surpasses in importance or difficulty the problem of health education and publicity. Under the caption of "The Revolt Against Knowledge" a writer in a recent issue of *The Survey* concludes: "Here is the greatest of all scientific tasks: How shall science get itself accepted by the race of men?" What a challenge to the health promoter, to the salesman of health! Let no stone be left unturned in developing the means—in perfecting the technique for leading the people into the new realms as yet practically unoccupied. This is our job. Meanwhile, the explorers, encouraged by our earnestness, will penetrate yet further into the unknown and open up new fields which in due time will be captured the more easily if we succeed well with our present task.

Our topic this morning takes up the progress made in 1923 in using the various avenues of health information, especially the exposition, broadcasting, printed matter, school methods and materials and bulletins.

BROADCASTING HEALTH

Mr. B. R. Rickards, New York State Department of Health.—The first use of a wireless telephone for broadcasting a health message, so far as the writer has been able to discover, was during Cancer Week in November, 1921, when Dr. Charles A. Powers of Denver, the President of the American Society for the Control of Cancer, gave an address on cancer at the government broadcasting station in that city. It was picked up and reported on from many stations as far away as the Pacific coast.

On December 16, 1921, less than a month after Dr. Powers' address, the United States Public Health Service began regular weekly health talks from the Naval Observatory Station NOF at Arlington. This service, we understand, is still being given, but from another government station. The Public Health Service states that the plan was first outlined in July, 1921.

The New York State Department of Health was the third organization to take up this new and effective method of getting the health message to the people. On Friday, March 24, 1922, we sent out our

first radio health talk and this service has continued uninterruptedly every Friday night at 7:40, eastern standard time, with two exceptions—one out of respect to President Warren G. Harding. In the other case we substituted a brief announcement of the death of our beloved Commissioner, Dr. Hermann M. Biggs.

Massachusetts, Ohio and California now broadcast weekly. Colorado repeats the radio talks of New York State, and several other states give radio talks occasionally. The California report states that a daily talk is given from a San Francisco station. We have reports of health broadcasting from Detroit, Baltimore, Minneapolis and Los Angeles. If other city health departments are making use of this method we have not received data thereon.

The length of time devoted to radio health talks varies from five to sixty minutes. The United States Public Health Service formerly broadcast for fifteen minutes but after the Second National Radio Conference cut down the time to from eight to ten minutes, and indicates that much better results have been reported since the change was made, for a longer period tends to become monotonous.

The New York service is probably the shortest—five minutes—and we believe that the best results can be obtained in this length of time. It simply means boiling your material down and making your statements short and to the point.

It is unquestionably an excellent plan to send out the radio broadcast in the form of news letters to the papers in your territory. In New York State we have found the newspapers willing and eager to use this material.

The value of radio broadcasting can perhaps best be judged by the number of letters received asking for further information and by the number of newspaper clippings. Only one state reports that they think the results obtained of comparatively little value. The United States Public Health Service estimates the monetary value of the newspaper space obtained through broadcasting health talks given July, 1922, to July 1, 1923, at over $123,000, based only on newspaper clippings received, and of other publicity at $195,000, based on letters received, making a total of $319,533. Over 2,858 pieces of literature have been mailed in response to requests sent in as a result of the health talks.

There is no question that by the radio method health information reaches parts of the country and individuals otherwise inaccessible. It should also be remembered that a fairly large proportion of the radio audience are children and that information coming to them in this way is more apt to impress itself on their memories, than if it were given in printed form or by personal talks.

A few suggestions based on the experience of the writer may not be out of place. Make your statements short but to the point. Make no statements that are open to the slightest question or that will be misunderstood or misinterpreted. Avoid words containing many sibilants. "Necessary," "success," and similar words do not "go over the air" well. Talk slowly but steadily, taking pains to enunciate clearly. Remember that your audience must take in and absorb one statement before it is ready for the next. This is particularly true if your address has been made pithy as recommended. Don't make your talk too heavy—lighten it with comparisons and illustrations. The use of the word "you," showing that you appreciate that you are speaking to an unseen audience, produces a good effect.

One word of warning should be given—a method of education which has proved so valuable for legitimate public health purposes will not be long overlooked by the charlatans and quacks. As a matter of fact, one of the most powerful eastern stations was used a short time ago by a woman who aired her own

views regarding cure of cancer by diet. One of the most powerful stations in the country, capable of being easily heard about 1,500 to 2,500 miles away and situated in the center of our country, is owned and operated by a school of chiropractors. It is high time that some form of censorship should be exercised over the kind of material allowed to be broadcast. It would seem that some action by this organization looking toward that end would not be out of place.

EXHIBITS AND EXPOSITIONS

Miss Anna K. Behr, National Organization for Public Health Nursing.—Health shows are with us. East and West, North and South, they are with us in big cities, in medium sized cities, and in little cities. Judging from their popularity and from the number of agencies launching them, they are with us for some little time.

One leading publicity person has said: "But why concern ourselves with them? The health exposition is only a passing phase of public health education. It will go just as the child welfare exposition of ten or twelve years ago has gone." Now this is a theory which we do not hold, believing rather that the health exposition of to-day is a further development, or in other words, a natural descendant of the child welfare exposition idea. And inasmuch as the health exposition has been so cordially received and the health officers of some of the leading cities of the United States seem rather to regard it as a point of honor to hold at least one during their terms of office, the subject of health shows is perhaps worthy of the health worker's careful consideration.

When this paper was assigned me I was especially instructed to mention those health exhibits which had been presented since the last meeting of the A. P. H. A. There have been many, as you all know, and they have been sponsored by various groups in different ways. All have been more or less successful on the whole in turning the thought of the average citizen to the consideration of health for at least a few hours of the year.

Right here let us make a statement which will be the "take off," so to speak, for this paper. We believe it is fair to say that the health show has reached the second stage of its evolution. The third stage is the ideal to be further discussed later on. But at the present time the health show has reached the second stage.

The whole question of health shows has received the careful study of the Health Exhibits Committee of the National Health Council. So many letters from constituent members have been received that the Council felt they were obligated to give the question thoughtful consideration. "Do you believe in health shows?" we were asked. "Do you think the public will get anything out of seeing us at this show?" These questions were honestly and seriously put, and the writers were appealing for guidance. Therefore the Health Exhibits Committee undertook the study of these shows. It happened that New York City was putting on its second annual Public Health Exposition at the Grand Central Palace. Tickets were distributed to the clerical staffs of the member organizations of the National Health Council. The clerical staff and shipping room force was chosen because it was felt that they most nearly approximated the average intelligence of the masses that would take in the health shows. As a matter of fact, because of their daily contact with some phase of the whole health problem, they were very probably above the average intelligence.

Two or three days after the Health Exposition was over these young men and women who had not before known they were to be questioned were interviewed by the publicity persons of the several member organizations of the Council. The findings of these informal questionnaires indicated the following facts:

1. That the explanation of attendants at the booths particularly attracts the passerby.

Two girls stopped at the ice exhibit, a commercial exhibit, because of the very interesting way in which the man in charge of the booth presented the subject.

The dentist's chair was also very attractive because the person who cleaned the teeth of the children in the chair also talked with the people visiting the booth.

The same report was made about the shoe booth.

2. That motion arrests interest. No one seemed to fail to see one exhibit where milk was constantly pouring out of a milk pail.

3. That the miniature three dimension exhibit is particularly popular.

4. That wall charts, whether they contain pictures or verbiage, or statistical facts, receive the attention of only the unusual person.

The study conducted by the Health Exhibits Committee of the National Health Council did not reveal anything particularly new. But the beliefs of all of us with regard to health shows were very much strengthened. Health shows were good things, but for all the effort and money expended there was not as much return in the form of public education as there should be and might be. It was the feeling of the Committee that health shows as now conducted are largely a hodge-podge of material gathered from commercial and voluntary agencies and because of this fact the show does not do all it could in real health teaching.

Just imagine yourself with the fourteen- or sixteen-year-old mind of Mr. Average Citizen. You go to the Health Show honestly hoping for information or else because a free ticket was given to you by your employer. You pass down the aisle and have hurled at you thoughts about good coffee, the work done for the city's poor, a new scouring powder, the value of life insurance. Or if you were unfortunate enough to attend last year's Brooklyn Health Show you met at the entrance a delightfully cool, peaceful looking booth, advertising tomb stones. Fancy the acrobatic stunts your own mind would have to go through to grasp it all. Then orient yourself to Mr. Average Citizen's fourteen-year-old mind. His poor gray matter, if it isn't absolutely numbed by the process, is doing more than double quick time.

The realization of this fact is in substance what led the National Health Council to draw up tentative plans for the ideal health exhibit. Credit is due here to Dr. Philip P. Jacobs, publicity director of the National Tuberculosis Association, for giving shape to the plan. I will give you a brief résumé of this plan for a health show, which the Council's Exhibit Committee believes is the basis for a really successful health show in the full meaning of the term. Until the proposed kind of a health show is put on we do not believe that health shows have attained their real usefulness.

The proposed plan for the health show centers on the fact that the exhibits must be topically arranged and designed to teach the individual the fundamental principles of personal and community health. It is suggested that all exhibits be grouped under some such general headings as food, clothing, recreation, cleanliness, housing, air, and ventilation, etc. The commercial and noncommercial agencies would then naturally group themselves under these headings. Thus for example, under food would be grouped such agencies as soups, meats, groceries, nutrition class exhibits, home economics clubs, etc.

Under recreation the grouping would be similar, the Playground Committee finding themselves beside the display of tennis racquets and golf sticks.

In this way the man who visits the exhibit receives new ideas in an orderly fashion and is better able to take them in. The adjusting is all done beforehand and he is saved one difficult mental process of classifying his new impressions and bringing order out of chaos.

It is further suggested that in viewing an exhibit the visitors be obliged to go in

one direction and through certain fixed lines or that trained demonstrators go with all parties and explain all the exhibits. The National Health Council has cordially invited the present concerns putting on health shows to study and experiment with this plan.

Indeed, the members of the Committee are so sure it will be a real success that they are confident that even more educational and commercial agencies will readily consent to exhibit. There will be no need for the appearance in print of such a sentiment as was expressed in a very recent publication, a sentiment which smacks very obviously of coercive methods and a sentiment which we are very glad of an opportunity to censure. The statement read: "So and So (naming a group within a certain state) will remember gratefully those who participated in the exposition so as to make it such a tremendous success, and they should not be forgetful of the numerous large firms who have lived on public patronage, who were so selfish or short sighted as not to assist in this tremendous movement for public health."

The Health Exhibits Committee of the National Health Council believes that this new method of developing a health show is full of promise and urges all health workers to consider seriously the adoption of the proposed plan. It is believed that when this has been done the health show will have reached the third stage of its evolution, its periods of greatest usefulness.

NEW IDEAS AND STUNTS

Dr. H. E. Kleinschmidt, Toledo Public Health Association.—A Health Circus Parade—The Westchester County Tuberculosis Committee tells about a Humpty Dumpty circus held on June 3, 1922, in connection with which there was a parade. "There were some very clever stunts by the children, particularly the elephant which carried the banner of the Westchester County Tuberculosis Committee. Perhaps the cleverest thing in the parade was the burlesque calliope made by two energetic young boys. It was pulled by a horse and wagon and bore a sign, 'We are blowing good health to you.' Smoke came out of an old stove on the rear. Boys were inside on a box blowing horns. The two boys on the wagon were dressed up ridiculously, one playing the keyboard and one driving the horse. There was an ostrich and horses were made out of burlap, excelsior, wire and laths. The Committee also rented animal suits for some of the children and this part of the parade was most amusing. Behind these 'animals' came children carrying placards with health slogans, including many which said 'Buy Christmas Seals.'

"Twenty-two boys from the parochial schools wore baseball suits and carried placards depicting the 'World Series—Home Team—Resistance' and 'Visiting Team—Tuberculosis.' Every boy represented a unit of the ball team, such as 'First Base—Closed Windows' on one team, and 'Fresh Air' on the opposite.

"Next came the fire department and then the board of health with four floats filled with children, mothers and babies. One float was the Little Mothers' League, another The Junior League, a third the Baby Welfare Station and the fourth, a very handsome decorated float given by the Genung's Stores and carrying signs telling of the clinic service. Winding up the parade came the second band and about sixty automobiles with clever health slogans."

Prizes for Good Teeth—The Virginia Tuberculosis Association, commenting on a little stunt in mouth hygiene, says, "At the county fair the chairman of Henrico County Tuberculosis Committee offers a medal to the child who has teeth in perfect condition. A dentist is on hand to make the examinations and 'medals' which are awarded are shiny silver quarters pasted on blue ribbon and pinned upon the proud chests of the youngsters."

A Play About School Medical Inspection—The Massachusetts Department of

Public Health writes: "Most of the health plays we have seen have been written for the instruction of children and performed largely by children. The Massachusetts Department of Public Health has recently tried another plan, namely, a health play for adults, with both adult and child performers, and dealing with the subject of the medical supervision of the school child. This play is entitled 'The Lion and the Nurse.' It is being given at the school hygiene conferences now being carried on by the State Department of Education and State Department of Public Health."

The Ice Man Takes a Hand—Here is an envelope called, "Speaking of the Baby." Inside is a little pamphlet called, "Summertime is health-making time." This pamphlet contains suggestions to the mother about keeping the baby well during the summer, and plays up the health building rather than the destructive qualities of summer. One paragraph reads: "Most important of all, feed no spoiled foods. Take proper care of food. Food is spoiled by germs. Warmth encourages the growth of germs; cold discourages. Keep your ice box cold, not lukewarm."

Now, of course, that is excellent advertising for the ice man, and in the city in which this was distributed the ice company, which has a monopoly, was willing to pay for most of this job, and distribute it through the ice men who delivered ice because this was indirectly an advertisement of ice.

A Window Display—Some time ago in Toledo we had a little window display. We are trying to popularize "Have a Health Examination on Your Birthday."

We had several placards explaining what we meant by the health examination, and this little tableau: A birthday cake with the required number of candles carried by four little gnome figures. One little fellow was in front carrying a banner, "Have a Health Examination"; and in the rear another, "Have a Health Examination on Your Birthday." It attracted a great deal of attention.

It occurs to me that this idea might be used in connection with a parade also. One could make a gigantic cake and have it carried by sign bearers whose placards tell what is meant by "Have a Health Examination on Your Birthday."

People have happy thoughts on their birthdays, up to a certain age. We could make a happy appeal from that standpoint. Such a parade, too, might make use of some of the other tried ideas on the health examination. For example, we might start off with a good looking automobile of the vintage of 1919 or 1918 with the explanation plainly placarded that this machine had been overhauled every year and had been taken care of. This might be followed by a dilapidated machine of recent make which had been neglected, compared with the man who takes poor care of his body. Those ideas might be incorporated with the idea of periodic health examinations.

Several members of the audience contributed ideas or stunts.

Healthgrams by Dr. Clark.—Our city, Haverhill, Massachusetts, is a city of fifty-five thousand. We have one newspaper. If one in ten read our healthgrams, five thousand read them each night. We have published what we call a healthgram in a space of two inches and a half on the front page, half column each day. The healthgrams have run over four years next February. They are wholly along preventive lines. No treatment is given. We feel that the thing has helped very materially in raising money for our Tuberculosis Association, and that it has been appreciated.

As you can imagine, the subjects touched upon must be very varied. We aim to have four each month on tuberculosis because the tuberculosis association pays for the space. We endeavor to make these things attract and keep people curious as to what is going to happen the next night.

Rewards for Being Schick Tested by Mr. Platt.—We used the usual methods to stimulate interest in the Schick test with the usual lack of results. Our circular put in the hands of the parents, distributed through the schools, urging the Schick test, giving consent slips for the child to bring with him—these methods were ineffective, bringing almost no results.

Finally we were rather desperate, this having continued over the second year, and on one occasion Dr. Hitchcock, our medical director, who had in his desk drawer a supply of talcum powder samples given to him by one of our leading toilet article manufacturers, gave one of these to a child as a reward for having taken the Schick test without crying.

This child was very much impressed and went out with the talcum powder and showed it to his friends. Within ten minutes five or six children came in and wanted some of the talcum powder. "Have you had your Schick test?" No, but they wanted to be tested.

"Go get the consent of your parents and you can have it and you can have your talcum powder."

We had sixty or seventy that week, and a hundred or so the next. We didn't attempt to really make a run on it; we let it take its own course to see what would happen. This showed that the children needed some inducement. When we gave them something, they came for it.

That gave us the opportunity to organize a real Schick test contest among the school children with teams and captains with attempts to get the maximum number of children in the community to come and have their Schick test within a certain week. We had 500 Schick tests within a certain week, and the reward in this case was transferred from talcum powder to tooth paste. Then later we had a moving picture party, and that was about as effective a reward as the samples of tooth paste and talcum powder.

They were informed at the beginning of the competition that the winning team was going to have a special box seat performance at one of the leading moving picture houses, and all the members taking the Schick test were going to be invited to a special matinee at one of our leading picture houses, which was donated for one morning.

The children came expecting to see Charlie Chaplin, at least. They didn't see Charlie Chaplin, but they saw one of the Connecticut State Department of Health pictures on diphtheria prevention. It is rather interesting to know that they really manifested immense interest in this film. They thought they recognized the doctor and the nurse. "There's Doctor Hitchcock"; "There's Miss Bott"; "We know about that"; "I got Schicked"—you could hear these comments all over the house. They never got so stirred up over a moving picture as they did over this which they knew all about.

PRINTED MATTER

Evart G. Routzahn.—Some Reports: Annual and Otherwise—Hartford Visiting Nurse Association: concise, effectively illustrated with silhouettes, in only eight pages it gives the essential features of an annual report. Child Health Organization: an annual report in the form of an almanac, all of their report data being presented in almanac fashion. Detroit Department of Health: summarized in one issue of the monthly bulletin, not much larger than usual, and also as 15 pages in "Detroit's Government," a pamphlet of 128 pages reporting in brief all the city departments. New Haven Health Center: a detailed and very readable report of the three year demonstration conducted by Mr. Platt, with shiny paper used only for the pages carrying illustrations. U. S. Bureau of Education: "The Child Health School," a frank, interesting, untechnical and useful report of an experiment. Dominion Department of Health: annual report of the Division of Child Welfare, offered as an

example of reporting health activities in all the provinces.

Printed Matter Addressed to Children—St. Paul Public Schools: "The Whimsical Sayings of Three Wise Schools," is probably the "best seller" in the health field during the past year. After a visit by "Professor Happy" the students of three high schools got together and prepared this booklet which has been widely used in high schools. American Child Health Association: two new ones by "Professor Happy." "Happy's Calendar for 1924" is worthy of its author and its illustrator, Briggs. In "A Parody Sport Book" Happy has produced a real "boy's book" for real boys. Serbian Child Welfare Association of America: Health Rhymes, published by the Association in Serbia, is an effective example of restraint in the use of words to supplement colored pictures which tell the story.

Printed Matter on Specific Subjects—U. S. Bureau of Education: "Sleep" is probably the first pamphlet to enlarge upon and make practical the frequent advice to "get plenty of sleep." While addressed to teachers, many parents may find helpful material in its pages. Fifth Avenue Coach Company: "Fresh air," as the title is set up in type, was written by the New York Tuberculosis Association to secure more patrons for the upper decks of the well known Fifth Avenue buses, where one may fill his own fresh air prescription on the automat or cafeteria style after dropping a dime in the conductor's slot machine. Michigan Department of Health: "Protecting Michigan's Health" explains the Department to the public by telling about what is done rather than by outlining the administrative machinery. Kentucky State Board of Health: "Health Plays, Games and Assemblies," 242 pages of class room material, with helpful illustrations.

New Forms of Printed Matter—Brooklyn Tuberculosis Committee: a giant mailing card to physicians on one side of which is reproduced a car card urging health examinations; and a birthday greeting card, sent to everyone whose birth date is known to Dr. Prest, urges the recipient to celebrate with a health examination. Charleston County (S. C.) Health Department: multigraphed educational circulars, some taking the form of "Healthograms," in imitation of telegraph blanks.

Good Looking Printed Matter—American Child Health Association: a decidedly attractive price list of publications with a cut-out Greek temple on a blue background.

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Mr. James A. Tobey was called upon by Mr. Routzahn to mention briefly the new idea in health education literature, the series of 20 little leather covered booklets which are being edited by the National Health Council.

Other subjects presented at this session were: Press and News, by Marjorie Delavan, Michigan Department of Health; Health Department Bulletins, by Ira V. Hiscock, Yale School of Medicine; School Methods and Material, by Georgie B. Collins, Malden Public Schools.

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THE ETIOLOGY OF SCARLET FEVER[1]

The alleged cause of scarlet fever has been discovered(?) so often that one approaches new work on the subject with more than usual caution. However, during the last few months a series of articles have appeared in the *Journal of the American Medical Association* by George F. and Gladys Henry Dick, which demand more than usual attention.

A hemolytic streptococcus was isolated from the pus of an infected finger of a nurse who had been in charge of a case of scarlet fever. The nurse later developed mild scarlet fever. The streptococcus obtained from the pus was swabbed on the tonsils and pharynx of five volunteers, two of whom developed a typical but mild scarlet fever. Five other volunteers who allowed their throats to be swabbed with a filtrate (Berkefeld V) of the culture remained negative.

Later, the same investigators used the filtrate of these cultures for intracutaneous tests, and found that an inflammatory reaction resulted in persons who gave no history of having had scarlet fever more regularly than in those who were convalescing from the disease. Reaction is shown by a small circular area of redness which begins in four to six hours, reaches its maximum in eighteen to thirty-six hours, and subsides after approximately forty-eight hours. Desquamation takes place in some cases within a week or ten days. Positive reactions were obtained in 41.6 persons with no history of scarlet fever, while all convalescent patients were negative, or gave slightly positive reactions.

Two volunteers, one of whom had given a negative, and one a positive reaction to the skin test were inoculated with another strain of streptococcus. The first volunteer remained well, while the second contracted scarlet fever. In a still later paper the authors report that five volunteers showing positive skin tests were injected with the filtrate of their culture. In all a constitutional reaction with rash resembling scarlet fever occurred, after which skin tests were either greatly modified, or else negative. The authors believe from their experiments that thy have demonstrated the rôle of certain streptococci in the cases which they have reported.

1. J. A. M. A., October 6, 1923; January 26, 1924; February 16, 1924; March 1, 1924.

Corroborative evidence has come from two other sources within the last few months. A. R. Dochez and Lillian Sherman have succeeded in immunizing a horse against a hemolytic streptococcus believed to have a causative relation to scarlet fever. This serum has the same action as the serum of a convalescent patient in causing a local, permanent disappearance of the rash, the Schultz-Charlton reaction.[2] Francis G. Blake, James D. Trask, Jr., and J. F. Lynch had positive results with this same serum in 23 tests performed on 13 cases of scarlet fever, while it had no effect in cases of erysipelas. Of 13 cases injected with the serum in doses of 40 to 60 c.c., 10 recovered within 12 to 24 hours. Two others, who were extremely ill, and who received larger amounts of serum (200 c.c.) showed striking improvement promptly with complete recovery in 36 hours. One case died, although the administration of the serum cleared up the rash as in other cases.

Dochez states that streptococcus hemolyticus is present at some time in all cases of scarlet fever and that it is a specific biologic type which is not found in other septic conditions. In guinea pigs a disease resembling scarlet fever can be produced with this organism. In horses, an antiserum is produced, which has the power to blanch the rash locally in scarlet fever and to markedly modify and abate the symptoms when used therapeutically.

We cannot but hope that this work will be generally confirmed, and that within a short time it will be put on a practical basis. This will add to our resources not only a method of diagnosticating susceptibility to scarlet fever, but of immunizing against it, and of treating successfully declared cases.

2. Zeitschrift f. Kinderh., 17:328, 1918.

THE PROPHYLACTIC USE OF ANTITOXIN[1 2]

Various accidents in the past have taught us that in dealing with biological preparations great care must be exercised. Deaths have occurred under tragic conditions, and have always been followed by more or less of a reaction against the use of the preparation involved. In the early days of diphtheria antitoxin deaths which could not be accounted for occurred on rare occasions. Our knowledge of allergy has cleared up the darkness which surrounded these cases and we now understand with a large degree of accuracy just what the dangers are and how they can be avoided, although every now and then a new condition arises which has not been met with before. The most recent of these was the untoward action of a toxin-antitoxin mixture, which had been frozen, in the city of Boston.[3]

For several years past this JOURNAL has advocated the use of the Schick test and the immunization of those giving a positive reaction. It has been quite generally taught in medical schools that the prophylactic dose of diphtheria antitoxin should be given to persons who are directly exposed to diphtheria. It is not definitely known how widespread this use of antitoxin has become, but reports from cities in which more or less exact information can be obtained show that it has considerable vogue. In Chicago it is stated that 78 per cent of family contacts are treated, but this is probably exceptional. The alternative to immunization is the daily examination of contacts and the use of antitoxin in therapeutic doses at the earliest possible moment after infection.

The danger of antitoxin lies chiefly in anaphylactic shock. This is often only

1. Public Health Reports, Feb. 15, 1924, page 283.
2. Boston Medical and Surgical Journal, Feb. 21, 1924, page 295.
3. Boston Medical and Surgical Journal, Feb. 14, 1924; J. A. M. A., Feb. 16, 1924, pages 552 and 567.

severe enough to be disagreeable and alarming, but it is sometimes rapidly fatal, though it is known that the danger in human beings is not nearly so great as in some of the lower experimental animals. It has even been claimed by some writers that death has never resulted from subcutaneous injection, but there are positive cases proving the contrary. We know also that in addition to the sensitization produced by injections of serum certain people are hypersensitive for reasons unknown or but little understood. The danger of injecting serum in cases of status-lymphaticus is well recognized and untoward results have been observed in persons suffering from asthma, which may or may not have been attributable to the condition of the thymus. The whole question resolves itself into the relative danger of death from anaphylactic shock or death from diphtheria.

In spite of our knowledge concerning diphtheria and its prevention there are still approximately 200,000 cases in the United States each year with 15,000 deaths, and a large number of cases of post-diphtheritic paralysis. About 80 per cent of the deaths occur in children of preschool age. In families of young children as many as one of every five who come in contact with diphtheria may be attacked if not protected by some form of immunization. Chapin showed years ago that contacts with cases treated at home suffered to a much greater degree than contacts with hospitalized cases, and this observation has been verified by studies recently made in Baltimore, the rate being 4.4 for hospital cases, and 9.4 for those at home. Even if we assume a case fatality of 7 per cent, which is not excessive, the excess risk of death for nonimmunized contacts is one death for 162 exposed children. If as low a case fatality rate as 2 per cent is assumed the excess risk is one death for 568 exposed children. The best available data indicate that the risk of death from the administration of antitoxin is about one in 75,000, and this risk can be reduced by avoiding the use of antitoxin in children who suffer from asthma, or give other signs of susceptibility to horse serum. There are also other precautionary methods which may be carried out in cases in which we have reason to suspect sensitization. It seems therefore when we compare the comparative risk of one with the other, that many lives may be saved and many cases of illness avoided by using antitoxin for immunization, and in the light of these studies this JOURNAL will continue to advise the use of antitoxin for immunization purposes. In giving this advice we do not in any way wish to belittle the danger of anaphylactic shock. The physician to whom such an unfortunate accident has occurred will never forget it, and in spite of his freedom from blame such a death will always remain for him one of the most disagreeable memories of his life.

That occasionally unforeseen and untoward results follow the use of antitoxin must be recognized, but should not seriously weigh against the enormous saving both in illness and death by its use. These accidents are no more legitimate objections to the use of antitoxin than are those which sometimes follow the use of anesthetics and narcotic drugs to the employment of these indispensable agents.

DIPHTHERIA MORBIDITY AND MORTALITY

It is a well recognized fact that in spite of the discovery of diphtheria antitoxin and the tremendous lessening in the death rate through its early use, we have not succeeded in reducing the morbidity rate of diphtheria. This still remains a blot on the record of our preventive measures.

A recent study[1] has demonstrated that there are a number of causes for this

1. THE PUBLIC HEALTH JOURNAL, February, 1924.

condition of things, none of which are entirely new, but all of which need to be impressed upon the minds of physicians and the public alike. The findings may not apply in their entirety to all places, but most of them are more or less true everywhere.

The influence of schools in spreading infectious disease has long been known. As the majority of cases of diphtheria occur in the preschool age it might be argued that school infection plays little or no part. It seems, however, that infection at school does play an important part in infection at the home. In the older age groups the school factor is evident, and this is especially seen in rural communities where there is little or no school inspection. In cities the medical inspection of schools, the taking of swabs, and the use of prophylactic treatment play an evident part in preventing the spread of the disease.

Another interesting factor is the difficulty of tracing the source of infection and proving it positively. On this point improvement is needed, since "intelligent epidemiological investigation must precede efficient control of outbreaks." Some improvement in our ability to recognize sources of infection is greatly to be desired, since an unrecognized source may continue to infect.

Laryngeal diphtheria is still a prime cause of death, and it seems that there are still a few physicians who consider membranous croup one disease and diphtheria another. It is especially difficult to obtain positive swabs from cases of laryngeal diphtheria, but it cannot be too strongly insisted upon that membranous croup is laryngeal diphtheria and should be treated as such. It seems necessary also to insist that in every case of sore throat or nasal discharge in which there is any suspicion or possibility of diphtheria swabs should be taken for laboratory examination.

Delay in the administration of antitoxin is another great cause of death, and it is apparent that many physicians delay giving antitoxin until a positive report is received from the laboratory. There are also cases in which antitoxin is not administered in so-called mild cases of diphtheria through fear of anaphylactic shock. Cases unquestionably recover without the use of antitoxin, but it is flying in the face of Providence to refuse to give it, even though the case has the appearance of being mild. The earlier antitoxin is used the better. Antitoxin cannot restore a weakened heart, which may lead to sudden death, but it can and does prevent this condition when given early and in sufficient quantity. Even where it is supplied free, cases are met with in which there is delay in administration, or it is not given at all. Antitoxin should always be given at once when the clinical signs are such as to arouse a reasonable suspicion of diphtheria.

Two other factors which are closely related are frequently seen. Approximately 5 per cent of deaths are in unrecognized cases, and in 8 per cent the patient is moribund when first seen by the doctor. While the unrecognized case is due largely to the carelessness or ignorance of the physician, the moribund case is due to the ignorance of the family. The remedy for both of these conditions is education.

The use of antitoxin requires a word. In the early days when the whole serum was used there were reasons for comparatively small dosage on account of bulk, expense, etc. At the present time a large amount of antitoxin, measured in units, may be given in very small bulk, and the bulk is never a bar to sufficient dosage. Too often the dose given is insufficient. A large number of units properly given early in the disease is worth many small doses given later. Intravenous injection

of antitoxin is also to be advised, though it is comparatively rarely used by attending physicians. Experience has demonstrated what reasoning would indicate, that intravenous injection is rapid in its effects and very much more efficient than subcutaneous injection, in which total absorption does not take place for many hours. The procedure is safe and does not of itself produce untoward results. In sensitized patients, anaphylactic shock must be taken into consideration.

IS PUBLIC HEALTH WORK A MENACE?

Biologists and eugenists as a rule do not like health officers, physicians and others who tinker with the public health. Until recently, the complaint was that they claimed too much. The improvement in mortality, especially from such conditions as tuberculosis, could be credited to the public health movement only in part, if at all. Such improvement was more likely the result of the operation of long-time changes in the infecting organism or in the resistance of the host, the latter reflecting the results of a process of selection through the ages. Now, the charge is a little different. The biologists admit the potency of public health effort and even grant that increased longevity may be attained through the more general application by communities of preventive medicine and sanitary science. Such increased longevity, however, in their opinion implies concern for the future. "The biologist knows," they say, "that the smaller the death rate in this generation, the larger death rate in the next, and the fewer individuals worth keeping alive."[1]

In other words, the attainment of the public health objective is by no means the blessing we have all assumed it to be. The reduction of sickness and of death among infants and young people, the advancing of the age at death, by perhaps ten or more years, for the large mass of the population, which assures a longer working period for the wage earner and a fuller family life, far from being the greatest achievement of the past century is, in fact, a questionable practice. The health workers are only substituting one set of evils for others, and perhaps worse ones. Instead of making the world a better place to live in, they are making trouble for posterity by maintaining individuals not worth keeping alive. They are polluting the life stream of the next generation; they are, in fact, obstructing the processes of natural selection which purify the stock of the community. They are impoverishing the material out of which the life and the power of the future are to come.

These are very serious charges, even if they are lightly made. On what evidence do they rest? One would imagine that an indictment which attacks the underlying objective of a well-established profession, which questions the value of a procedure of civilized life, that has the warrant of instinct, sentiment, religion and commonsense, and for which communities are taxing themselves in increasing measure, would have an enormous body of seasoned fact and conclusion on which to rest. But, as one runs through the literature in search of such facts, one finds next to nothing. One learns rather that these are the ways in which biologists contributed to sociological thought during the period when the doctrine of natural selection had its greatest vogue. It is a point of view, rather than a mass of facts

1. Eugenical News, November, 1923, Volume III, No. 11, page 110.

we are confronted with, and, apparently, the biologists have not yet learned to recognize the difference. When pressed for facts, one distinguished eugenist answered like this: "The population born in any day may be conveniently considered as consisting of two parts: those who will die before maturity (a) and those who will die later (b). As (a) diminishes, (b) increases and as a first approximation—the death rate falls. Two biological principles have to be accepted; (1) that disease resistance is usually hereditary, or that it comprises hereditary factors, and (2) prematurity deaths are, on the whole, selective. Then if (a) diminishes, selection diminishes; hence arises a population that has progressively less and less average natural resistance; and this process is cumulative until nature wins over medicine and the high proportion of prematurity deaths recurs." This is a typical and, I believe, a representative expression of the eugenist's point of view.

But, are we so sure of these biological principles which are in vogue and do we have to accept them? Is disease resistance usually hereditary and are prematurity deaths selective? What is the evidence? With virtually every child of our urban populations showing a history of one or several of the communicable diseases, what evidence is there that 'disease resistance is usually hereditary"? What do we know with regard to disease resistance? In their daily practice, physicians again and again observe that weaklings whom they expect to die, have a wonderful capacity for coming through acute disease. There runs through the writings of pediatricians and of clinicians generally reference to an amazing capacity for undernourished, miserable creatures to stand punishment. How flimsy also is the evidence for the assumption that premature deaths are, on the whole, selective. The charge, I know, has been made for years; but, on what grounds? The few stray observations hardly make a sufficient basis of evidence for so far-reaching a conclusion. The enormous improvement in infant mortality has not carried with it an increase in child or early adult mortality; but, on the contrary, continued and marked decreases. High infant mortality was, obviously, a sheer waste of human life affecting both strong and weak infants, the good and the bad. Neglect in feeding may kill any infant. Mass infection when widely distributed through communities will affect children quite irrespective of the intrinsic worth of the parental stock.

The biological point of view, furthermore, usually overlooks altogether the great value to the race of gifted individuals whose physique is not of the best. Necessarily, they lead sheltered lives. If exposed to the rude forces of nature, they would succumb. But, their contribution to the advancement of mankind may be of the highest order and worth more to the community than that of many individuals of better physique but of a lower mental and spiritual order. The community's requirement is not limited to good physique but includes good mental and spiritual faculties which likewise determine human conduct.

It is indeed fortunate that the faith which animates the public health movement and the medical profession is so completely in agreement with the simple and instinctive response of the great mass of mankind. After all every individual is a human being and every soul is essentially worthy. This is still a good doctrine to go by, even though we know with respect to a small fraction of the population that it were better all around if they departed this world without progeny. But, this is a far cry from the prevailing opinion of the biologists. A type of snobbery limits their approval to the upper crust, and they forget that the world's work is done by ordinary people who usually are pretty well constituted and contain within themselves whatever qualities the world needs of leadership and of genius, provided opportunity be given for the expression of extraordinary power. The cold, stark

realism of the biological thinkers will, we fear, never provide a firm foundation for community endeavor because their current doctrine is essentially untrue, and because if it were true, it would serve as a challenge to change and undo the crude forces of nature to make them more in keeping with that Christian, humanitarian philosophy which animates our lives when we are most like men.

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ASSOCIATION NEWS

LIST OF MEMBERS

Proposed for election to the A. P. H. A. March 1 to March 28, inclusive.

Names of New Members are set in Light Face Type.
Names of Sponsors are set in **Bold Face Type.**

CALIFORNIA

Frank Kelly, M.D., **Berkeley, Calif.**
Lulu L. Case, B.S., City Laboratory, City Hall, Berkeley, Calif. Bacteriologist.

CANADA

Homer N. Calver, **New York, N. Y.**
Joseph Felix Delisle, M.D., D.P.H., Post Office Box 44, Hull, P. Q., Canada. Sanitary Inspector for Hull District, Province Quebec.

FLORIDA

John H. Mills, M.D., **Tampa, Fla.**
Alva C. Hamblin, M.D., City Health Department, Tampa, Fla. City Health Officer.

ILLINOIS

Homer N. Calver, **New York, N. Y.**
Bellenden S. Hutcheson, M.D., 800 Commercial Ave., Cairo, Ill. City Physician and Health Officer (part time).

LOUISIANA

Homer N. Calver, **New York, N. Y.**
Francis Merton Munson, M.D., Lieutenant, Medical Corps, U. S. Navy, Retired, De Soto Parish Health Unit, Mansfield, La. Unit Director, Louisiana State Board of Health.

MASSACHUSETTS

Miss Eva M. Lord, **Forge Village, Mass.**
Alice M. Wells, R.N., Box 129, Westford, Mass. Industrial Nurse with Abbot Worsted Co., Graniteville, Mass.

MISSOURI

Homer N. Calver, **New York, N. Y.**
Bradford Massey, M.D., Flat River, Mo. Health Officer, St. Francois County.
James R. McVay, A.B., A.M., M.D., 47th and Millcreek Parkway, Kansas City, Mo. Member Missouri State Board of Health.

MONTANA

Homer N. Calver, **New York, N. Y.**
Arthur Jordan, M.D., Box 367, Helena, Montana. Field Agent, U. S. P. H. S., City and County Health Officer.

NEBRASKA

Homer N. Calver, **New York, N. Y.**
Frank D. Ryder, M.D., 206½ W. 3rd St., Grand Island, Neb. City Health Officer.

NEW JERSEY

Homer N. Calver, **New York, N. Y.**
J. F. X. Strick, M.D., 212 Garden St., Hoboken, N. J. Health Commissioner, Hoboken, N. J. (part time).

NEW MEXICO

Homer N. Calver, **New York, N. Y.**
William Howard Enneis, M.D., Clayton, New Mexico. County Health Officer.

NEW YORK

Homer N. Calver, **New York, N. Y.**
Frank S. Swain, M.D., 54 West First St., Corning, N. Y. Health Officer and Venereal Clinic Physician.
Hilton J. Shelley, M.D., 35 South St., Middletown, N. Y. Health Officer, Middletown.
Lewis I. Frank, Beth Israel Hospital, Monroe, Jefferson and Cherry Sts., **New York, N. Y.** Superintendent.
Mary Ann Abel, 419 S. A. & K. Building, Syracuse, N. Y. Director, Onondaga County Tuberculosis and Public Health Association.

NORTH CAROLINA

Homer N. Calver, **New York, N. Y.**
Robert Sherwood McGeachy, M.D., Kinston, N. C. Health Officer, Lenoir County.

OREGON

Homer N. Calver, **New York, N. Y.**
Walter Cayley Belt, M.D., C.M., Court House, Roseburg, Ore. Health Officer.

RHODE ISLAND

Prof. Frederick P. Gorham, **Providence, R. I.**
Jane F. Peckham, M.S., Room 311, State House, Providence, R. I. Bacteriologist, Rhode Island State Board of Health.

SOUTH CAROLINA

Homer N. Calver, **New York, N. Y.**
Baylis Haynsworth Earle, M.D., P. O. Drawer 1453, Greenville, S. C. P. A. Surgeon, U. S. P. H. S. (Regular Corps), Retired; Commissioner of Health, Greenville County.

TENNESSEE

E. L. Bishop, M.D., **Nashville, Tenn.**
John J. Lentz, M.D., Nashville, Tennessee. County Health Officer, Davidson County.

WEST VIRGINIA

Homer N. Calver, **New York, N. Y.**
Mrs. Eugene C. Waters, R.N., 622 5th St., Huntington, W. Va. Child Welfare.

ASSOCIATE MEMBERS

MASSACHUSETTS

Mary R. Lakeman, M.D., **Brookline, Mass.**
Elizabeth K. Bacon, A.B., 1 Cypress Road, Wellesley Hills, Mass. Secretary of the Wellesley Friendly Aid (the District Nursing Association).

OHIO

Homer N. Calver, **New York, N. Y.**
James M. Woltz, care the Youngstown Sheet and Tube Co., Youngstown, Ohio. Charge of sanitation work and drinking water supplies for mills and homes.

DR. PARK ADDRESSES THE PHYSICIANS IN INDUSTRY

The President of the Association addressed the Conference Board of Physicians in Industry on April 4, in New York City. This was the Tenth Anniversary Meeting of the Conference, and an extensive program dealing with many phases of industrial medicine was arranged. Dr. Park spoke on the relation of the American Public Health Association to industrial medicine. He pointed out that the physician in industry and the health official are both sanitarians; but that they often do not understand the problems and the work of each other. The American Public Health Association provides an opportunity for all branches of the public health profession to meet on a common ground and develop a close professional relationship, which will be helpful both to the health official and the industrial hygienist. Among the other speakers were Mr. Samuel Gompers, Dr. Otto P. Geier, and Dr. W. Calvin Thompson. Mr. Gompers stated that "after all, industrial hygiene is almost inseparable from public health."

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A NEW COMMITTEE OF THE A. P. H. A. FOR SERVICE TO THE HEALTH OFFICER

"A forum," says Mr. Webster's monumental work, "is a term from Roman antiquity meaning a place of popular assembly, and the center of public business." Its second meaning is "a tribunal or court."

It is a far cry from the forum of ancient Rome to the present-day Annual Meeting of the American Public Health Association; but the word "forum" to-day is just as useful as it ever was for describing a place where people congregate to discuss matters of common interest, whether that discussion centers upon the bravest gladiator and Caesar who was ambitious, or frozen antitoxin and the promotion of longevity.

When a committee of the Association was appointed a few days ago, at the request of the Chairman of the Editorial Board, Dr. Henry F. Vaughan, its purpose and its proposed methods of work were carefully considered, and it was decided that no more fitting name than the ancient and honorable one of "forum" could be given to it. So "Forum Committee" it is called!

The purpose of the Forum Committee is a single one—service to the health officer—but it will carry out its purpose in two ways. First, it will live up to Mr. Webster's second definition and act as a "tribunal or court" to which all matters pertaining to the proper administration of a health department may be brought for consideration. The opinions it renders will be published in the AMERICAN JOURNAL OF PUBLIC HEALTH each month in the section known as "The Health Officers' Exchange."

All public health administrators are invited to call upon the Forum Committee for the solution of any of their problems. The names of inquirers will be held in strict confidence, if so requested. The Committee is assisted by an able group of referees, expert in all matters technical, who will furnish the specialized knowledge needed so many times in addition to administrative skill. The benefit of the combined wisdom and experience of these technicians and administrators is at the disposal of every member who wishes to make use of it.

The second method the Forum Committee will use to fulfil its program of service to the health official will be to conduct a special session at the Annual Meeting—"an open forum for the discussion of health officers' problems"—where those questions will be answered which have been asked most frequently of the Committee during the year or which may be specially proposed for the consideration of the meeting. It will be a clinic on public health problems. There will be ample time allowed for discussion from the floor, and if the interest which has already been expressed in the Forum Committee from the slight announcements which have been made of its appointment is an augury of what may be expected in the future, this session will in reality be "a place of popular assembly" and the center of public interest, if not of public business; thereby proving that the Forum Committee is entirely worthy of its honorable name. Its members are as follows:

WATSON S. RANKIN, M.D., *Chairman.*
L. I. HARRIS, M.D.
F. G. CURTIS, M.D.
JOHN L. RICE, M.D.
C. C. HUDSON, M.D.

Communications for the Committee should be addressed as follows: THE FORUM COMMITTEE, American Public Health Association, 370 Seventh Avenue, New York City.

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 8th of each month for publication on the 20th. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to business office in New York City. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Public Health nurse for City-County Health Department. Automobile and traveling expenses furnished. Salary to begin, $135.00 per month. Chances of advancement good. Position open May 1, 1924. Address City-County Health Officer, Great Falls, Montana.

Wanted: At once, a man qualified to act as health officer for a growing community in northern New Hampshire. State training, experience and salary expected. Apply to Board of Health, Berlin, N. H.

Wanted: Laboratory technician in state board of health. Must be college graduate, have at least one year's experience in routine laboratory work such as diphtheria, sputums, widals, gonorrheal smears, typhoid isolation; knowledge of Wassermann technic not essential. Salary to begin, $100. Two weeks vacation after one year of service. Address 558 L. S., care of this JOURNAL, New York address.

Wanted: An Atlantic Coast State is desirous of securing a competent director for its Public Health Laboratory. It is desirable that he be a physician, preferably one who has had a public health training. Salary to begin, $3,600 per annum. Address 557 E. C., care of this JOURNAL, New York address.

UNITED STATES CIVIL SERVICE EXAMINATION

Physiotherapy Aide—Physiotherapy Pupil Aide: Examinations will be held throughout the country on May 7 and June 18, to fill vacancies in the Public Health Service at entrance salaries ranging from $720 to $960 a year plus the increase of $20 a month and furnished quarters, subsistence, and laundry free of cost; and in the United States Veterans' Bureau at entrance salaries ranging from $1,600 to $2,500 a year for physiotherapy aide, and from $1,000 to $1,400 a year for physiotherapy pupil aide.

POSITION WANTED

Positions wanted announcements will be carried for individuals at a charge of $2.00 per insertion. Copy should be received at the New York office by the 8th of the month preceding publication.

Wanted: Positions for graduates from a New England State College. These students have had special training in bacteriology and would like positions in hospital or public health laboratories. Address 289 S. C., care of this JOURNAL, New York address.

A University graduate, trained in public health at the Massachusetts Institute of Technology desires a new connection.

He has had four years' experience as health officer of an eastern city of 35,000; held an administrative position in social hygiene; sixteen months' service in the Sanitary Corps, U. S. Army; field organizer for a large eastern state health department and since has served for four years as Executive Secretary of a national health society.

Rather exceptional success has been had in correlating health activities, directing surveys; and in executive, organizing and secretarial work. Publicity work through all manner of presentation of health facts has been a constant part of his work. Has had equal success in enlisting coöperation of both physicians and laymen. References gladly provided. Address 290 C. S., care of this JOURNAL, New York address.

Chemist—bacteriologist, B.S. degree in engineering chemistry, broad experience in sanitary water examinations—chemical, mineral and bacterial. Well qualified as sanitarian. Experienced in public health publicity, in operation of filter plants, sewage disposal, etc. Formerly in charge of state laboratory. Desires to re-enter public health field. Salary open. Opportunity for additional study desirable. Address 292 W. R., care of this JOURNAL, New York address.

Wanted: Position in city, county or state health department by man experienced in city and rural work with university training in public health and M.D. degree. Available immediately. Address 291, Phil, care of this JOURNAL, New York address.

HEALTH OFFICER'S EXCHANGE

PUBLIC HEALTH PERIL

DEPARTMENT OF HEALTH
City of New York
March 14, 1924.

To the Editor,
American Journal of Public Health,
1415 St. Antoine Street,
Detroit, Michigan.

My dear Editor:

Your editorial on "A Public Health Peril" in the March number of your journal is timely and important. You are well advised and just in describing the unlegalized practice of medicine by the graduates of diploma mills and by the exponents of the various so-called "new schools of medicine," who are doing a thriving business in every state of the Union, as a peril to public health. It is fitting and necessary for the public health officials of this country to assume a leading rôle in the efforts now making to suppress this serious evil.

While I do not wish to commit myself, for the present at least, to an unqualified approval of the measure which you suggested in your editorial as a partial remedy for the situation, I wish to commend it, however, in so far as it shows a dispassionate and nonpartisan attitude toward the various schools of medicine. I most heartily endorse the idea of impressing the public with the need for limiting the right to treat a human being whose life may be in great jeopardy, to those who have been trained and properly educated in what is basic and fundamental in Medical Science.

It is both proper and wise, in making an attack upon this peril, not to narrow it in scope to the few of the thrice fifty-seven varieties of cults, which happen at the moment to be most in the limelight of publicity.

The three things that are essential to reform present-day evils and to prevent the peril to public health which you point out are the following:

First.—Demand adequate and uniform educational qualifications in every state of the Union for any person who desires a license to treat the sick.

Second.—A method of registration and check-up that will at once single out any person who is not legally qualified to practice medicine.

Third.—Prompt and vigorous prosecution of those who practice illegally.

Depend upon my support in your campaign. I am sure that public health officials generally will rally to assist you in this most laudable enterprise.

Very truly yours,
FRANK J. MONOGHAN, M.D.,
Commissioner.

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COMMISSIONED GRADES FOR SANITARY ENGINEERS

TREASURY DEPARTMENT
Bureau of
The Public Health Service
Washington
March 17, 1924.

My dear Mr. Calver:

I beg leave to acknowledge receipt of your letter of March 12th, requesting advice as to the present status of the bill providing commissioned grades for sanitary engineers in the Public Health Service.

It is rather a coincidence that your letter was received at the same time as the information in the attached letter from the Director of the Budget to the Under-Secretary of the Treasury. The proposed bill, about which you inquire and which has been indorsed not only by the American Engineering Societies but by the representatives of your Association, National Nursing Association, the dental profession and others, was approved by the departmental budget committee but was disapproved by the President on recommendation of General Lord, the Director of the Budget.

It is unnecessary for me to say that I regret very much to have to inform you of this fact.

Sincerely yours,
H. S. CUMMING,
Surgeon-General.

BUREAU OF THE BUDGET
Washington
March 8, 1924.

Hon. Garrard B. Winston,
Under-Secretary and Budget Officer,
Treasury Department.

My dear Mr. Winston:

I am in receipt of your memorandum of the 27th ult., submitting draft of a letter to the Speaker of the House of Representatives transmitting a proposed bill entitled "A Bill to pro-

note the efficiency of the United States Public Health Service."

I have submitted this matter to the President, who has instructed me to advise you that the proposed legislation is in conflict with his financial program.

Very truly yours,

H. M. LORD,
Director.

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CENSUS OF "COLDS"

IN A CLASS OF 367 COLLEGE FRESHMEN, OCTOBER, 1919, TO APRIL, 1920

In talking with the chairman of a board of health of a New England town, some years ago, I mentioned, along with other matters, the "cold" as an important public health problem. "Well, of course," he said, with good natured finality, "as for the common cold, that is a subject somewhat below the plane of responsibility of a health officer." Public health opinion of recent years, seems to be running somewhat to the contrary. The following figures may be of interest as giving a rough picture of the incidence and effect of the "cold" in a group of young people. The figures were compiled from ballots filled out weekly by the students in a required college course in hygiene.

NUMBER AND DISTRIBUTION OF "COLDS"

Distribution	26	84	101	91	40	18	3	2	1
Number of colds	0	1	2	3	4	5	6	7	8

Total number of "colds"—849.
Total number who had "colds"—341.

DURATION

4 days or less	29 per cent
5 days to 7 days inclusive	35 per cent
8 days to 14 days inclusive	25 per cent
15 days or more	11 per cent

TYPE OF "COLDS"

"Head"	65 per cent
"Throat"	13.5 per cent
"Head and throat"	9.5 per cent
"Chest"	12 per cent

EFFECT ON EFFICIENCY

None	33 per cent
Very slight	22 per cent
Moderate	18 per cent
Considerable	27 per cent

The figures will not bear exact statistical scrutiny, since the percentages in the last three headings conceal the fact that the actual totals under these headings are not as great as the grand total under the first headings. This is due to the students' carelessness in failing to fill out ballots completely. Neither can the students' judgment of the type of cold, nor her recollection of its duration be relied upon exactly. Nevertheless, the general facts stand out clearly, even though roughly, that (1) only 26 out of 341 persons, or between 7 and 8 per cent were free of colds; (2) many colds were of considerable duration; (3) "head" colds predominated; (4) almost half of the individuals concerned reported either moderate or considerable decrease in efficiency, while almost a third reported a considerable decrease. From such a group one can expect understatement rather than exaggeration of inconvenience caused by the "common cold."

EUGENE C. HOWE, Ph.D.

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ISOLATION BEFORE DIAGNOSIS

Dear Mr. Editor:

Under the above caption appeared a brief and strikingly well-put article by W. C. Sieker, in your issue of March, 1924, page 208.

Seldom has a more important article appeared anywhere on communicable diseases. The general adoption of the principle urged, would inaugurate a new epoch in control of infection, and aid immensely its ultimate abolition.

Isolation of *all* fever cases, until proved to be noninfectious, herein advocated, is to my mind *the* solution.

The coöperation of the general public and therefore their education to this end is the first need. The medical profession sees but a fraction even of developed cases, and relatively rarely sees any infection in its early stages. This is particularly true of measles, but also of almost any infection. Actual records made in Minnesota showed that the physician in ordinary practice rarely saw typhoid before the seventh day.

The American Public Health Association and its *Journal*, can do no greater immediate service to present preventive measures than to repeat and emphasize in every way the principle enunciated in this article.

H. W. HILL,
Director Institute of Public Health.

REFINED MORTALITY RATES FROM CANCER

Crude mortality rates from cancer are of very limited value for interstate or intercity comparisons, primarily because the age and sex distribution of the population is very different in different localities, and secondarily, because many afflicted with cancer die at hospital centers far away from their home towns, thus in-

creasing the cancer mortality rate of the hospital town and at the same time diminishing the cancer mortality rate of the home town.

The following table of refined rates will perhaps, therefore, present a truer picture of the present situation. In these refined rates allowance has been made for deaths of nonresidents and the figures have also been adjusted to the standard million population of England and Wales, 1901. The states are arranged in the order of rank of the refined rates and for purposes of comparison the crude rates are also given, and in the fourth column the order of rank of the crude rates.

CANCER MORTALITY RATES, 1921.

State	Refined Rates		Crude Rates	
	Per 100,000 estimated population	Order of rank	Per 100,000 estimated population	Order of rank
South Carolina	48.4	1	34.4	1
White	55.9		43.6	
Colored	39.2		25.5	
Tennessee	50.7	2	47.1	4
White	50.4		47.3	
Colored	50.5		46.4	
Florida	51.6	3	51.3	5
White	56.5		63.2	
Colored	35.2		27.6	
Mississippi	53.5	4	41.8	2
White	54.5		45.1	
Colored	52.3		38.9	
North Carolina	54.2	5	42.9	3
White	53.5		44.6	
Colored	53.9		38.8	
Virginia	62.9	6	56.6	8
White	64.5		60.9	
Colored	56.6		46.4	
Louisiana	67.1	7	53.6	6
White	72.5		59.3	
Colored	58.1		44.3	
Montana	68.6	8	54.7	7
Kansas	69.8	9	79.3	12
Delaware	70.7	10	79.1	11
Utah	72.3	11	63.3	9
Colorado	72.7	12	74.7	10
Missouri	74.1	13	84.8	14
Indiana	74.9	14	92.2	20
Ohio	77.7	15	89.8	19
Nebraska	78.1	16	82.4	13
Oregon	78.2	17	94.8	24
Minnesota	78.9	18	89.4	18
Washington	79.3	19	85.8	16
Vermont	79.7	20	113.5	30
New Hampshire	81.6	21	119.8	33
Maine	81.8	22	116.5	31
Michigan	81.8	22	87.8	17
Maryland	82.0	24	93.1	22
White	83.1		98.1	
Colored	74.2		68.5	
Pennsylvania	84.3	25	85.4	15
Wisconsin	86.5	26	97.6	26
Illinois	87.2	27	93.0	21
California	87.3	28	111.7	29
Connecticut	89.3	29	96.9	25
New Jersey	94.4	30	93.3	23
New York	95.2	31	105.7	27
Rhode Island	98.0	32	110.4	28
Massachusetts	98.4	33	118.0	32

A similar comparison of figures for the 14 largest cities and boroughs is likewise interesting.

CANCER MORTALITY RATES.

City or Borough	Refined Rates		Crude Rates	
	Per 100,000 estimated population	Order of rank	Per 100,000 estimated population	Order of rank
Baltimore	86.9	1	105.1	8
White	89.7		111.9	
Colored	63.9		65.7	
Cleveland	88.3	2	77.1	2
Pittsburgh	90.1	3	94.8	5
Detroit	92.4	4	69.9	1
Buffalo	93.7	5	102.6	7
Brooklyn	95.8	6	86.5	3
Los Angeles	97.8	7	131.0	12
Philadelphia	99.8	8	109.4	9
Chicago	100.6	9	96.5	6
Boston	102.4	10	139.6	13
St. Louis	102.6	11	115.9	11
Bronx	105.6	12	87.3	4
Manhattan	114.2	13	112.9	10
San Francisco	123.1	14	152.7	14

NOTE:—The refined rates have been found by first allocating deaths from cancer to areas of residence and computing rates, and then by applying to these rates the corrective factor necessary to change the crude rates from cancer to the adjusted rates based on the standard million of population of England and Wales, 1901.

WM. H. DAVIS,
U. S. Census Bureau.

DISCUSSION

The Census Bureau has made a distinct contribution, not only to the study of cancer mortality in the United States, but to the better understanding of death rates from other diseases, and the tabulations are certain to attract much thoughtful attention.

Crude death rates, which are the ratios between the number of persons who died during the course of a year in a community compared with the number of the living during the mid-year, as generally employed in public health work, are often misleading. They make no allowance for conditions which influence the death rate, such as an excess or deficiency of one sex over the other, or a preponderance of young or old people in the place under consideration. A city whose inhabitants are largely made up of vigorous young people would naturally have a lower rate than a city which has lost a large part of its youthful population by emigration; but unless allowance was made for the age differences of the population, this statistical error would not be corrected. It is to allow for peculiarities

of age and sex distribution that the Census Bureau has, for some years, issued rates which have been adjusted to a standard population, the standard employed being that which has been used in England and Wales.

In places where the negro population is large enough to produce a marked effect upon the mortality rates, separate figures have long been given by the Census Bureau for the negroes and whites separately, and for the two combined.

A step in advance has now been made and allowance is made not only for the peculiarities of age, sex, and race which exist, but account is taken of the residence of the decedents. In these refined tables persons who died away from their places of residence have been counted as having died at their homes, and not charged against the places where they happened to be when death overtook them.

So far, the Census Bureau has issued death rates in which allowance has been made for age, sex, race, and residence, for cancer only. It is understood that the cancer work was done to facilitate statistical studies which were being carried on by the American Society for the Control of Cancer and which will soon be published by that organization. It is the second conspicuous help which the Census Bureau has given toward a correct understanding of the prevalence of cancer, the handsome monograph "Mortality from Cancer and Other Malignant Tumors—1914" being the first.

The tendency of the new rates is to lessen the apparent differences which have hitherto seemed to exist in the prevalence of cancer in different parts of the United States. The Northeastern and Pacific states still show the highest rates, and the Southern states the lowest. But the order in which the states and cities fall when arranged according to the height of their rates is quite different from that of any other order hitherto published. San Francisco still is seen to have an exceptionally high rate, 123.1 per 100,000; but the refined rate is much lower than the crude rate, 152.7, which has generally been quoted, and instead of being the highest of any city it is second to Cambridge, 123.7.

Some of the differences between the crude rates and the rates now available amount to over 30 per cent. There is not always a reduction, by any means. Akron, for example, has a refined rate of 70.9, whereas the crude rate is 48, a difference of 45.6 per cent. Albany, whose crude rate of 149.5 placed it second among American cities having the highest crude cancer death rates, now drops to thirty-second place, with a rate of 94.0.

The state having the highest refined cancer death rate for 1921 was Massachusetts, with a rate of 98.4. The lowest was South Carolina, with 48.4. New York is now well towards the top, with 95.2.

The tables contain a wealth of information and it is believed that the report of the American Society for the Control of Cancer, which will give an interpretation of the figures, will be of much interest.

Important as are these cancer death rates, as showing more correctly than has hitherto been possible the relative frequency of death from one of the most common and baffling causes, the publication of the new Census Bureau figures performs even greater service, for it strikingly calls attention to the fact that all crude death rates have much less significance than has generally been attributed to them.

GEORGE A. SOPER, PH.D.
American Soc. for Control of Cancer

BOOKS AND REPORTS REVIEWED

The Elements of Vital Statistics in their Bearing on Social and Public Health Problems.—*D. Appleton & Co., New York,* 1923. 623 pp. $7.50.

The third edition of Sir Arthur Newsholme's Vital Statistics is very welcome. The book has been greatly enlarged and has been entirely rewritten. The author has had in mind the health officer and the educated layman, and has avoided the higher mathematics of the biometrical school. Indeed he points out the grave dangers in the over-refinements of statistical method. Such elaboration of statistical procedure cannot atone for, but rather emphasizes the danger from imperfect data.

The difficulties of, and methods of dealing with deaths, where several causes are certified, is discussed. The necessity for carefully scrutinizing each return is insisted on. The reader will find ample instruction concerning the use of death rates and morbidity rates, and their adjustments for different populations. It cannot be too often impressed on the health officer, that it is likely to lead to grave error to compare death rates and birth rates unless adjustment is made for the marked variations which are common, especially in this country, in the age, sex, and other readily established differences in population. All the way through the book the author calls attention to careless and misleading methods of using vital statistics. Many specific instances of such misuse are given. Perhaps this insistence on care and honesty in the use of medical statistics is the most valuable feature of the work, at a time when public health education is so often undertaken by propagandists with no scientific sense or training.

Though the necessary directions are given the health officer for the preparation of statistics, a large portion of the work is taken up with a discussion of specific problems and the statistical data for their solution. A few of these may be mentioned, as the effect of alcohol on health, infant mortality and the alleged influence of preventive measures on the preservation of the unfit, housing and disease, poverty and disease, the influence of isolation on the prevalence of scarlet fever, the prevalence of venereal diseases, the alleged great increase of cancer and the causes of the decrease of tuberculosis. These discussions are extremely valuable and suggestive.

Though the work is intended to be a guide to applied vital statistics employing such arithmetical methods as are comprehensible by the average health officer, some reference is made to the work of the biometricians and the reader is told where further information may be obtained. The reviewer is one of those health officers whose mathematics does not go beyond arithmetic and he has made constant use of the second edition of this work, which he has kept within reach at his desk for many years. The new edition, as soon as it appeared, took its place. It is a most excellent and practical book.

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Elements of Water Bacteriology, With Special Reference to Sanitary Water Analysis.—*Samuel Cate Prescott, Professor Industrial Microbiology in the Massachusetts Institute of Technology and Charles-Edward Amory Winslow, Professor of Public Health in the Yale School of Medicine. Fourth Edition. Rewritten. New York: John Wiley & Sons,* 1924. Cloth. Price, $2.25.

For practically twenty years this book has been a standard guide for laboratory workers. Three editions have in the past brought it up to date as the science of water bacteriology progressed. This last edition once more brings the book abreast with our latest knowledge. It has been largely rewritten, and shows a more complete revision than any of the previous editions.

Much historical matter has been omitted, and the authors have concentrated upon procedures of proven value. The methods described in the last report of the Committee on Standard Methods of the American Public Health Association have been accepted throughout, though not given in their entirety in the text, the authors assuming that all water laboratories will

have a copy of that report at hand for consultation. The references have been brought up to date and all of the older ones have been retained, so that those interested in historical matters which have been omitted from the present volume can easily find them.

The size and style of the make-up has been changed, though the total contents of the book have apparently not been increased, and the book is still not too voluminous for really handling and reference.

Some additions which may be mentioned are Hitchens' proposed method for examination of water under unusual conditions, the value of titrations by the pH method and the effect of the pH on the viability of intestinal organisms.

We believe that the book is the best of its type extant, and recommend it as accurate and reliable. As stated in the preface of the first edition, water bacteriology is largely an American development, of which we have good reason to be proud. Without in any way belittling what has been done by scientific men in other countries, we can fairly lay claim to this distinction for American bacteriologists, who will find in this book a fitting record of their accomplishments.

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A Bibliography of **Eugenics.**—*Samuel J. Holmes, Professor of Zoology in the University of California. Paper. University of California Publications in Zoology, Vol. 25, pp. 514. Berkeley: University of California Press,* 1924.

This publication is monumental. The amount of work it represents cannot be appreciated until one goes over it carefully. Under the general title, Eugenics, we find 39 subjects listed, covering every point of view which one could wish, all indexed, so that one may immediately refer to the particular study desired. A few examples of titles may be given in order to show the wide range of knowledge covered: Heredity and Evolution, Notorious Families, Heredity of Human Defects, Alcohol in Relation to Heredity, The Heredity Factor in Crime, The Inheritance of Mental Ability, Natural Selection in Man, Selective Effect of Infant Mortality, Selective Influence of War, Consanguinity, The Sex Ratio, etc.

The author has collected his material from the largest and best libraries in this country, and has had unusual advantages afforded him through the courtesy and interest not only of librarians but also of some scientific workers in charge of institutions where partial bibliographies had been assembled.

It is not a book that any private person would care for, but it should be found in all libraries, since it contains material of intense interest and value for a wide range of students.

✣

Out of the Valley of the Forgotten or from Trinil to New York.—*John Edminston Bauman, M.S., M.A. Easton, Pa., The Chemical Publishing Co.* 2 vols., v. 1, xiv+535 pp., 38 figs. in text; v. 2, v+461 pp.

This treatise is an effort to apply the discoveries and principles of modern biology to the whole complex of current day problems of religion, sex, society and the state. Its topics range from the relative physical strength of apes and men, in which field the author has made some original observations, to dress reform and sewage disposal. He is an ardent apostle of science and knowledge as factors in social progress, of biology and public health in particular, of birth control, and of other reforms or radical changes in practice and point of view. The presentation suffers somewhat from a lack of progressive and coherent development.

✣

The Physical Basis of Life.—*Edmund B. Wilson. New Haven: Yale University Press,* 1893. Price, $1.50.

The memory of Professor William Thompson Sedgwick is kept alive among his colleagues in the biological world, and in the field of public health, generally by the Memorial Lectureship at the Massachusetts Institute of Technology. The first lecture on the foundation was fittingly delivered by his life-long friend, Professor Edmund B. Wilson of Columbia University. His theme was also fittingly one of deepest biological significance, The Physical Basis of Life, a theme immortalized by Huxley's Edinburgh address. A masterly treatment of our latest knowledge, and of its baffling deficiencies, is found in this lucid summary of the finer

structure of the cell, the varied contents of the cytosome, the elaborate structure of the nucleus, and of the phenomena of epigenetic organization of the egg. Although disclaiming any attempt to resuscitate the conception of the cell as colony of primary vital units, the lecturer directs his readers' attention to the desirability of further analysis of the finer structure and smallest corpuscular constituents of the cytoplasm. This is the most succinct, lucid and comprehensive statement of the nature and structure of protoplasm and of the organization and morphology of the cell to be found anywhere.

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Venereal Disease, Its Prevention, Symptoms and Treatment.—*Hugh Wansey Bayly, M.C., Hon. Sec. Society for the Prevention of Venereal Disease. Second Edition. New York: The Macmillan Company,* 1924. Pp. 176.

The author of this book has been a leader in the activities of the Society for the Prevention of Venereal Diseases in England, whose controversy with the National Council for Combating Venereal Diseases, resulted in the appointment by the Minister of Health of the Trevethin Committee which studied the place of chemical prophylaxis in a program for controlling venereal diseases. The committee report was published in *Venereal Disease Information* for July 20, 1923, issued by the United States Public Health Service.

The published policy of the author's society includes (1) the instruction of the public as to the importance of self-disinfection and methods of application, (2) ensuring the sale of disinfectants with full instructions, (3) education through leaflets, lectures, venereal clinics and military units.

The author starts with a discussion of the means of prevention, including education and legislation. The latter should provide for the notification of infected persons and their segregation while in an infective state, enforced treatment and an opportunity to purchase approved drugs. As a further means of prevention the value of supervision of prostitutes is stressed as opposed to licensing.

The bulk of the book is devoted to the clinical diagnosis and treatment of syphilis and gonorrhea, and will appeal especially to those physicians who are operating venereal disease clinics. The fundamental question of prevention and education is one which must receive the earnest consideration of every health officer. The policy generally adopted in America is at variance with the views of Bayly, and it is felt that there are practical methods of controlling the spread of infection without encouraging in the individual a sense of protection and immunity which might result in more widespread exposure.

✣

Blood Pressure, Cause, Effect and Remedy.—*Lewellys F. Barker, M.D., LL.D., Professor Emeritus of Medicine in Johns Hopkins University and Norman B. Cole, M.D., Assistant in Clinical Medicine in Johns Hopkins University. New York: D. Appleton and Company,* 1924. Cloth. Price, $1.25.

This book is written for the information of the nonmedical man. It takes up the misconceptions which prevail concerning blood pressure, the factors concerned in the production and adjustment of normal blood pressure, the causes and meaning of abnormal blood pressure, both high and low, and ends with a chapter on prevention. A glossary of the more or less technical terms used is appended.

It appears to us that the book accomplishes its purpose in an excellent manner. If we were to select one chapter for praise above others, it would be the last one, entitled, "What to Do?" Stress is laid on the factors in American life which are believed to bring on so much premature old age: tenseness, anxiety and fear, which are the result of the high-speed life so common in this country, and which are generally believed sooner or later to have a marked bad effect on the welfare of the body. The authors consider it possible that the three factors in "cardio-vascular-renal disease" may not result one from the other, but that all three may be due to some common, but still unknown cause.

The book can be recommended to the class of persons for whom it is designed. It is a book which might with advantage be placed in the waiting room of physicians.

Listen In.—*Henry Copley Greene. Department of Health Service, Boston Metropolitan Chapter, American Red Cross, 73 Newbury St., Boston, Mass.* p. 144. 25 cents.

At last we have a set of health talks—38 of them to be exact—which are simple, entertaining, and "tested so far as seems humanly possible, for exactitude and truth." Indeed as to the last point, "Every separate little talk has been read in advance by a committee of public health experts," says the author, Henry Copley Green, whereupon he gives a long list of medical and public health specialists who have helped in the preparation of these talks or who reviewed them before they were spoken to the radio audiences. We looked hopefully through the list for the name of at least one specialist in making information popular, but none was named. We found several talks which such an expert might have edited to advantage, but for the most part we agree with Dr. Richard C. Cabot, who says in an introductory note:

"The outstanding merit of Mr. Greene's book is that it is never dull, yet never sensational. Most health books are very unhealthy and very dull. They paint countless dangers which the average man runs with impunity every day, because they are not dangerous. Such books would poison our minds with terror and nervousness, while trying to make us fat and happy, but for their saving slump into dullness. Few of us read far enough to get much scared. Blessed forgetfulness soon sweeps down the embryonic shivers, and no harm is done.

"But this book is interesting, and so far as I know, most of it is true. If you begin it, you will probably read it through, and remember much of it. There are extraordinarily few exploded theories in it; and there is a great deal of sensible advice—even exhilarating advice here and there. This for so gloomy a subject and one so morbidly fascinating to many Americans, is a remarkable achievement. It is a heavy burden to be writing a book on hygiene at all; but if one is compelled by one's conscience and by the public demand to do such a thing, I don't believe it can be much better done than Mr. Greene has done it."

Each talk is about the length of the average folder issued by a health department and would take five or ten minutes to give over the radio.

Many of the titles are inviting, like "Keep a Good Heart," "Herd Your Bacteria Home," and "Hope for Whooping Children." Some of the others treat of subjects which do not need any furbishing to attract the reader. For example, "Tonsils," "When is a Cold not a Cold?" and "That Tired Feeling" suggest information that most people particularly wish to get.

It is a good book to sell if you have a bookselling machinery. And why undertake the hard work of producing original talks sufficiently attractive and effective for radio use, when one can utilize this little volume?

Careful proof reading should have eliminated a lot of minor typographical errors. The table of contents lists a chapter on "Temperature Taking." When it is said that a certain antiseptic is "naturally advertised" in a lavish way, the author probably means "nationally."

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An Epidemic of Food Infection Due to a Paratyphoid Bacillus of Rodent Origin.—The authors report an epidemic of food infection involving 59 cases. The cream filling of crumb cakes and eclairs was responsible for the outbreak having been contaminated with an organism of rodent origin, B. pestis caviae. This organism has recently been identified as a distinct paratyphoid type and it is thought to be a common cause of food infection in man.—Ole Salthe and Charles Krumwiede, *Am. J. of Hygiene,* 4:23, (Jan.) 1924. P. C. Y.

PUBLIC HEALTH ADMINISTRATION

LOUIS I. HARRIS, M.D.

The *Editor* of this column most earnestly requests Fellows and Members to communicate any new procedures, special investigations or achievements in public health administration which may be likely to prove of interest, or help others engaged in this work. If such reports have more than local interest they will be gladly printed in this column and commented on as freely as space and other considerations permit. These communications must be signed.

The *Editor* of this column will assume the right to express opinions chiefly with a view to stimulating free discussion and exchange of views on matters of current interest. The reproduction of doubly-distilled abstracts cannot be as valuable to public health administrators who do independent reading, as the exchange of news and views.

✚

The Aeroplane a Source of Disease.—Health officers have latterly looked with increasing pity upon those who feared aerial conveyance of germs to persons out of range of immediate point of discharge of such germs. This fear has recently been resurrected, although in a very modern setting. The fantastic character of the prophecy given Macbeth that he would never be vanquished until Great Birnam wood moved against him to Dunsinane Hill, was no protection; by a military stratagem, this seeming impossibility came to pass. Likewise, in spite of the scientific assurances that we have had, that nobody need apprehend the aerial pasage of germs to great distances, a modern scientific miracle, the aeroplane, namely, has made this most unlikely occurrence a reality. The possibility of an outbreak of smallpox, cholera or of some other communicable disease due to flying visitors, who were either ill or "carriers" has recently been seriously discussed in England. While the matter has, it seems, little practical significance at the moment, it suggests interesting possibilities. Those who fly cannot be stopped by quarantine officers. The importation of cases of communicable disease through this medium has been noted several times of late.—London letter, *J. A. M. A.*, 82:902. March 15, 1924.

Warning for the Tuberculous.—In the name of the National Committee of Defense Against Tuberculosis, French physicians have issued a formal notice counselling the tuberculous to be on their guard against the "healers" and venders of medicines or "new cures" for tuberculosis.

Those who have issued this warning are alarmed by the extent of the exploitation of sufferers from tuberculosis who give credence to the extravagant claims of a host of frauds. Patients are warned that there is no medicine, chemical or biological, and no serum or vaccine, that has been proved to be effective, and that they should lose no time in pursuing "cures" which are often harmful and always useless. (This warning is equally applicable, not only to the tuberculous, but to the host that rush to buy every type of "cure" whose pretensions are widely and boldly advertised.) —*Nation's Health*, 6:206. March, 1924.

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The Narcotic Problem.—Those health officers who have wondered why there has been so much clamor to make it appear that the narcotic problem has a large public health significance, will be greatly interested in the paper of Carleton Simon, Special Deputy Police Commissioner, Narcotic Division, New York City Police Department. Of 7,562 physicians in the State of New York who replied to a questionnaire, as to their experience, 94.8% or 7,170 stated that they did not treat any addicts. There were 389 physicians who treated a total of 775 addicts. From the police data accumulated as well as from other sources, it is concluded that the total number of drug addicts has been grossly exaggerated, that the number who acquired the habit through medical treatment is almost negligible, and that, by and large, drug addicts belong to the underworld, and the problem they present is a police problem and not essentially a public health question. Those health officers who have neglected this problem in order to concentrate upon procedures that bear directly and largely upon the prevention of sickness and death will find in this article a justification, if any was needed, for their course.—Carleton Simon. *J. A. M. A.*, 82:675. March 1, 1924.

Treatment with Scarlatinal Anti-Streptococci Serum.—The specific anti-streptococcus serum which Dochez has prepared by implantation of scarlatinal streptococci in agar-agar injected locally into the tissues of a horse with subsequent ulceration of such tissues has been used both as a diagnostic test and therapeutically. This serum causes the Schulz-Charlton Extinction phenomenon, namely, the complete and permanent blanching of the scarlet fever exanthem in the locality where it is injected intracutaneously; this is likely to prove of great value in the diagnosis of doubtful cases of scarlet fever in institutions and wherever else a means of prompt diagnosis is urgently needed.

In twelve early cases of scarlet fever, five of which were severely toxic, the use of the serum was followed by complete recovery in from twelve to thirty-six hours. In all but two cases, a single intramuscular injection of from 40 to 60 c.c. of serum sufficed. Its usefulness in late cases with septic complications has not yet been proved. It gives sufficient promise to warrant our close observation of its further trial as a means of diagnosis and treatment.—Blake, Track and Lynch, *J. A. M. A.*, 8:712. March 1, 1924.

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Influenza Epidemic.—A widespread epidemic of influenza has prevailed in England. In London, there were 154 deaths ascribed to influenza on one of the weekly returns in the early part of February; there were 501 deaths in the 105 large cities. The disease is of a mild type and prevalent to a greater degree than shown by the mortality returns. The following mortality table for the city of London for the weeks ending February 9 and 10 of this and last year respectively, show the increased mortality from respiratory and heart diseases:

	1923	*1924*
Deaths from Bronchitis.....	87	234
Deaths from Bronchopneumonia.	51	191
Deaths from Heart diseases.....	186	303

(The returns from New York City, on the contrary, show a much lower incidence and mortality rate for influenza and the respiratory diseases during the recent winter months.)—London Letter, *J. A. M. A.*, 82:902. March 15, 1924.

Incidence of Tuberculosis.—The view has become generally accepted that latent infection with tuberculosis, as indicated by the tuberculin reaction, was well-nigh universal in adults. The teachings of Bushnell, Calmette and Cummins have been responsible for this conception which has tended to discredit efforts to prevent transmission of tuberculosis to adults because 80 to 90 per cent were assumed to have gained immunity by reason of latent infections acquired during childhood.

Data compiled as to the frequency of a positive Pirquet reaction in children studied in St. Louis, New York and Philadelphia, indicate that at the age of 15, less than half showed evidence of tuberculous infection. The study by Charles Hendee Smith, in Bellevue Hospital, New York, of 1500 children, showed less than 15 per cent positive reactions at the age of five, and less than 40 per cent at the age of fifteen. A similar study abroad shows that in the smaller European cities, tuberculosis infection is much less widespread than had been assumed. —Editorial, *Nation's Health*, 6:108. March, 1924.

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The Renovated Mattress a Possible Health Menace.—In its Weekly Bulletin, the Department of Health of Chicago reports an investigation as to the disposition of discarded mattresses. Old mattresses, especially those thrown away by persons in charge of hospitals and hotels, are picked up by junk dealers, and with little or no cleaning or sterilization are sold for new. They were resold without being labelled as required by law to show that they had been remade. While the health hazard to the user of such mattresses may or may not be considerable, those who are employed in renovating them were found to suffer from skin infections and other ill effects as a result of handling material heavily contaminated with dust and vermin, or soiled frequently, with pus, human excretions and blood. While the degree of danger of spreading tuberculosis, typhoid fever or other diseases is undetermined and likely to be rather small, it is aesthetically repugnant. *Nation's Health*, 6:202. March, 1924.

PUBLIC HEALTH LABORATORY NOTES

C. C. YOUNG

Experimental Rabbit Snuffles.—As a part of a general experimental study of the epidemiology of certain bacterial infections of domestic animals at Rockefeller Institute, experiments have recently been made with rabbits with Bact. lepisepticum. Bact. lepisepticum, bacillus of rabbit septicemia, has been found to be constantly associated with snuffles. Cultures grown in broth were dropped without trauma into the nares of young rabbits bred from snuffles-free parents. Forty-five carefully controlled rabbits were inoculated intranasally with two strains of Bact. lepisepticum. Nineteen died, 16 developed typical chronic snuffles and 10 resisted infection. The 12 contacts kept under identical conditions with experimental animals but not inoculated, remained well.—L. T. Webster, *Proc. Soc. Exp. Biol. & Med.*, 21:236, (Feb.) 1924.

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Staining of Treponema Pallidum in Dry Smears.—A comparative study of 12 simple stains for Treponema pallidum was made on smears fixed fresh and fixed after four days. The variation in time of fixing made no difference and the best method was found to be Fontana's method after the following method: (1) Smears air dried and fixed with Huge's fluid (1 c.c. glacial acetic acid, 20 c.c. formalin, 100 c.c. dist. water) 1 min.; (2) washed in water, and covered with mordant of 5 per cent tannic acid in 1 per cent carbolic acid, heated until steam arose, and heated mordant allowed to act 30 sec.; (3) rinsed quickly in water, blotted, and covered with 2 per cent ammoniacal $AgNO_3$ solution (NH_4OH added drop by drop to $AgNO_3$ solution until faint opalescence succeeds brown ppt. first produced), heated until steam arose, and heated stain allowed to act 30 sec.; (4) washed, blotted, and examined.—Gilbert and Bartels, *J. Lab. and Clin. Med.*, 9:275, (Jan.) 1924. M. S. M.

✤

Influence of High Partial Pressures of Oxygen Upon Bacterial Cultures.—In the authors' review of the literature it is stated that increased oxygen pressure alters the growth, morphology or ability to produce toxin of various bacteria. The effect is different for different species. The author used 10 common varieties of bacteria, 2 to 5 strains of each variety. A 24 hour agar slant growth was washed off in saline and inoculation made from that to the surface of agar plates. Over 300 plates were examined, the smallest amount of suspension yielding an average of 150 colonies. Some of the bacteria were definitely inhibited by oxygen while others were practically unaffected. The inhibition was designated either in the size of the colony or the numbers of the colony. Those inhibited were: B. proteus, Strep. Hemolyticus, B. typhosus and B. mucosus capsulat. Those which were unaffected were: Pneumococcus, B. pyocyaneus, Staph. aureus, Staph. albus, B. Coli and B. subtilis. The pigment formation of B. pyocyaneus was reduced. The author suggests "it is hyperthetically possible in instances where growth is not inhibited, function may be reduced." The low content of bacteria in "Oxygen pneumonia" of experimental animals is probably not due to the inhibitory action of the gas.—H. T. Karsner, H. H. Brittingham and M. L. Richardson, *J. Med. Res.*, 44:83, (Sept.) 1923. L. D. H.

✤

Chronic Endocervicitis and Focal Infection.—1. The anatomic and pathologic facts reviewed point to the structural predisposition of the cervix uteri to act as chronic foci. 2. Bacteriologic and animal experiments indicate the special rôle played by the streptococcus, with regard to pathogenicity, and the relative unimportance of the more saprophytic flora. 3. Evidence is presented to show the affinity of cervical streptococci for joint tissues. 4. Marked percentage increase in joint localization in a series of selected cases of arthritis, suggests relationship with Rosenow's elective localization theory of focal infection. 5. Clinical and experimental evidence is offered as further support of such a relationship. 6. The antigenic properties of the cervical streptococci suggest low virulence but high specificity of these strains. 7. Evidence is offered to suggest a parallelism between the virulence of the cervical streptococci, and their biologic conditions of growth. 8. Experiments *in vitro* suggest the bactericidal, as well as the bacteriostatic effects of the analine dyes for cervical

organisms. A modification of Kennedy's intertestinal injection method is offered on the selective bacteriostatic principle for the elimination of the cervical focus.—Laura M. Moench (Mayo), *J. Lab. & Clin. Med.*, 9:289, 1924. M. S. M.

✤

On the Use of **Formaldehyde for the Preservation of Blood Specimens.**—Six samples of formaldehyde from various sources were tested to ascertain whether formaldehyde materially influenced the results when used as a preservative for bloods intended for blood sugar determination. The author concludes that it is inadvisable to use the average formaldehyde for this purpose since increased values for blood sugar were obtained.—Joseph C. Bock, *J. Biol. Chem.*, 59:73, (Feb.) 1924. J. M. S.

✤

Significance of **Negative Blood Cultures.**—A careful criticism of the work of Kipnis (abstracted this Journal, October, 1923) is made and experimental evidence produced to show that the defibrinated human blood or serum therefrom is bactericidal for B. typhosus. Bouillon in low dilutions is not a satisfactory medium for cultivating organisms of the colon-typhoid group from the blood. Satisfactory blood cultures for a large variety of organisms can be made by using two media; namely, bile for the typhoid-colon group, and beef infusion bouillon for the streptococcus, pneumococcus, etc. The author uses routinely 10 c.c. of bile to which 1 per cent of peptone has been added, and 10 c.c. of beef infusion bouillon to which 1 per cent sodium citrate and 0.9 per cent NaCl are added, with about 2 c.c. of blood for an inoculum to each.—Straus, *J. Lab. and Clin. Med.*, 9:345, (Feb.) 1924. M. S. M.

✤

The Application of a **Sulphite-Glucose-Iron Agar Medium to the Quantitative Estimation of B. Welchii and Other Reducing Bacteria in Water Supplies.**—In previous work on the subject of water pollution it was possible to detect only the spore-forms of B. Welchii, although in the feces enormous numbers of the vegetative forms are seen; and owing to the difficulty of quantitative tests for this organism in the routine bacteriological examination of water such tests were seldom carried out although B. Welchii was generally regarded as an indicator of fecal contamination. The authors suggest a media which readily differentiates this organism quantitatively and they remark that where the presumptive B. Coli is confirmed by the reduction test the assumption that the B. Coli is of excretal origin is materially strengthened.—W. James Wilson and E. Maud M'V Blair, *J. Path. & Bact.*, 27:119, (Jan.) 1924. L. W. G.

✤

A New Method of Preparing Vaccines.—In an effort to overcome the use of a high temperature in the preparation of vaccines as well as the use of chemical preservatives, the author attempted the use of freezing and thawing. He emulsifies cultures from gelose in physiological salt solution, places in aluminum tubes and freezes in a special apparatus at —18° C. for five hours. The tubes are then placed at room temperature (about 16° C.) for five hours. The process is repeated twice for pneumococci and streptococci, four times for B. Coli, six times for staphylococci and enterococci. The vaccine is then diluted to required dosage.—Dr. Rene Zivy, *The Lancet*, 206:221, 1924. P. L. K.

✤

Hemolytic Streptococci of Human Origin.—Hemolytic streptococci of human origin in milk is relatively resistant to pasteurization. The same is true when it occurs in ice cream stock mixture. The organism when grown in a lesion for purposes of multiplication is slightly more susceptible to the effects of heat than when cultivated repeatedly in the test tube. Should this streptococcus survive pasteurization in the stock syrup used in the ice cream industry, it neverthless is killed fairly readily by the high sugar content. It is uninfluenced by freezing temperature at —20° C.—Beckwith and Eddie, *J. Lab. & Clin. Med.*, 9:316, (Feb.) 1924. M. S. M.

✤

The Viability of Hemolytic Streptococcus in Certain Solutions Containing Gelatin.—Expriments were carried out to determine a suspending medium in which streptococcus will survive without increase or diminution in numbers for a considerable length of time. A hemolytic streptococcus isolated from an acute, gangrenous infection of the thigh was used in the experiments and the fluids tested were: (1) distilled water; (2) "normal" saline; (3) Locke's solution; (4) a balanced solution containing 1 per cent sodium chloride and 0.05 per cent calcium ("20-1"); (5) 0.2 per cent sodium citrate; (6) Zeng's mixture. Each fluid was prepared with and without 0.1 per cent gelatin and titrated to pH 7.8. It was

observed that in every case, the fluids containing gelatin maintained life longer than the corresponding fluid without gelatin. Of the six gelatin solutions, the gelatin citrate solution maintained life in the highest dilutions at room temperature until the end of the test—15 days. The others in order of efficiency were Locke's, Zeng's, "20-1", Zeng's mixture, distilled water and "normal" saline. The authors believe that the protective effect of gelatin is due not only to protection against mechanical injury of the diluting process but possibly to a coating of the organisms delaying the entrance of toxic substances and probably also to a slight nutrient action.—Frank L. Meleney and Zung Dan Zan, *Proc. Soc. Exp. Biol. & Med.*, 21:259, (Feb.) 1924.

✤

The Significance of Streptococcus Hemolyticus in Scarlet Fever.—A review of the literature shows that the incidence of streptococcus hemolyticus as in the throats of scarlet fever cases is high and that this streptococcus constitutes a specific biologic type. The authors have been able to produce an antiserum in a horse, which possesses the capacity to blanch the rash locally in scarlet fever and which when used therapeutically causes a marked abatement of the symptoms.—A. R. Dochez and Lillian Sherman, *J. A. M. A.*, 85:542, (Feb.) 1924. C. C. Y.

✤

Observations on the Treatment of Scarlet Fever With Scarlatinal Antistreptococcic Serum.—The authors made a clinical study of an antiscarlatinal serum prepared by Dochez by the immunization of a horse with scarlet fever streptococcus. Twenty-three rash extinction tests in thirteen cases of scarlet fever were made, with positive results. The amount of serum injected varied from 0.02 to 0.5 c.c. The area of blanching at site of injection varied from 2 to 6 cm. in diameter, depending on the amount of serum used. Fifteen control tests with equivalent amounts of normal horse serum were negative. Six control tests with from 0.3 to 0.5 c.c. of a polyvalent antistreptococcus horse serum were negative. The antiscarlatinal serum had no effect in two cases of erysipelas. In twelve early cases of scarlet fever, five of which were severely toxic, administration of the serum was followed by rapid and complete recovery within twelve to thirty-six hours. In one case, however, a single injection of 40 c.c. had no beneficial effect on the complications.—F. A. Blake, et al, *J. A. M. A.*, 82:712, (Mar. 1) 1924. C. C. Y.

An Analysis of 220 Cases of Endocarditis (With Special Reference to Subacute Bacterial Type.)—The 220 hearts studied were separated by necropsy findings into two main groups: hearts with active lesions and hearts with old healed defective valves. The cases with active lesions were further divided into (1) bacterial endocarditis and (2) rheumatic endocarditis. The bacterial type was divided on the basis of the deviation of the process into subacute and acute bacterial endocarditis. Bacteriological reports were made on 71 of the cases studied, thirty of which were on the cases classified as subacute. After a survey of the literature and an analysis of the 220 cases studied, the author concludes that the finding of streptococcus viridans in the blood in a case of endocarditis indicates a subacute bacterial form; that the presence of streptococcus hemolyticus or staphylococcus, generally indicates an acute form of bacterial endocarditis.—B. J. Clauson, *Arch. Int. Med.*, 33:158, (Feb.) 1924. C. C. Y.

✤

Surgical Conditions Caused by Intestinal Parasites: Reports of Two Cases.—Ascaris lumbricoides worms were extracted from a case of ruptured appendix and from a case of perforated ileum.—M. O. Robertson, *J. A. M. A.*, 82:717, (Mar.) 1924. M. C.

✤

Meningococcus Meningitis.—The vascular communication with the ear in the very young children explains the frequency of meningitis in connection with otitis. The otitis is often metastasis of meningococcenia. With headache, vomiting and fever, followed by signs indicating muscular hypertoxicity, lumbar puncture is imperative, and seratherapy should be continued with large doses until the meningococci have definitely disappeared. The spinal fluid may show 3 gms. of albumen and 54 cells per cubic millimeter, as in one convalescent recently, but this alone does not call for continuation of the antiserum. Parallel lumbar puncture and injection of saline in some healthy children showed up to 2 gms. albumen and 40 or 50 cells. One child died on the eighty-fourth day, and meningococci were found in the fluid. Seratherapy had been discontinued a month before. Ganzaley Alvorez reiterates the warning that the throats of all contacts must be disinfected, and seratherapy must be pushed with larger doses than generally used. Martin Alvarez, Archivos Espanoles de Pedeatrea, 7:664, (Nov.) 1923, *J. A. M. A.*, 82:426, (Feb. 2) 1924. M. C.

VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

Health Record for January, 1924.—The health record of January, 1924, was the best ever recorded for the opening month of any year among the fifteen million Industrial policy-holders of the Metropolitan Life Insurance Company. The death rate (9.7 per 1,000) represents a decline of about 9 per cent from the figure for January of last year (10.6). These figures are based on the actual number of deaths during January at all ages. The comparison would be even more favorable, if we were to eliminate from the mortality of January, 1924, the 1,120 deaths of infants which occurred in this month. No business was written on infant lives in the early period of 1923. The death rate on the basis of persons aged one year and over was only 9.0 per 1,000, which is 15 per cent below the figure for the opening month of 1923.

The general death rate for the large cities of the United States during January was 13.5 per 1,000 population which may be compared with 15.1 in January, 1923. As compared with December there was the usual seasonal increase. More cases of influenza, measles, scarlet fever, smallpox and whooping cough were reported than for the preceding month, but there was less diphtheria and typhoid fever. Comparison with conditions a year ago shows higher prevalence of measles, scarlet fever and smallpox with fewer cases of diphtheria, influenza, typhoid fever and whooping cough.—*Statistical Bulletin*, Metropolitan Life Insurance Company, (Feb.) 1924.

✤

Health of Scotland in 1923.—1923 stands out as the healthiest year in Scotland with a death rate of 13.49 per 1,000 for the 16 large burghs. The corresponding figure for the 105 county boroughs and great towns of England and Wales was 11.6. The general death rate for Scotland may be assumed to be about 13 per 1,000 as compared with 14.9 in 1922, 13.6 in 1921, 14 in 1920 and 15.6 in 1919. The mortality of most of the communicable diseases decreased in 1923, especially measles, pneumonia and influenza. Scarlatina showed a slight rise, on the other hand, as did diphtheria and nonpulmonary tuberculosis. The mortality of children under 5 in 1923 showed a striking decrease to 83.85 as compared with 114.2 for 1922. In the large towns of England and Wales the rate was 73.—*Brit. M. J.*, 1:212-213, (Feb. 2) 1924.

✤

Provisional Vital Statistics. England and Wales 1923.—The provisional birth rate for England and Wales in 1923 (19.7), is the lowest ever recorded except that for 1917-1919. The birth rate for the civil population of London was 20.2. The crude death rate for England and Wales was 11.6 and the infant mortality rate 69. For the civil population of London, the death rate was 11.2 and the infant mortality rate 61.—*Public Health Rep.*, 39:299, (Feb. 15) 1924.

✤

Vital Statistics of 10 Large French Cities, 1923.—In 1923 Paris showed a decrease over the preceding year in the number of births by 1,590; Bordeaux, 164; Nantes, 254; Toulouse, 68; Saint Etienne, 98 and Havre, 100. The following cities show an increase over 1922: Marseilles, 197; Lyons, 183; Lille, 69 and Strasbourg, 194. The net result is a diminution of 1,631 births.

The number of marriages in 1921 was 73,251; in 1922, 63,840 and in 1923, 59,227. This decrease will unfavorably effect the birth rate during the next few years. The number of deaths in 1921 was 86,614; in 1922, 84,778, and in 1923, 84,552.—*J. A. M. A.*, 82:730, (March 1) 1924.

✤

Public Health in St. Helena, 1922.—The estimated civil population of St. Helena on December 31, 1922, was 3,658. The birth rate in 1922 was 25.88 per 1,000 as compared with 25.3 in 1921. The death date was 9.87 per 1,000 as compared with the exceptionally low rate of 6.5 in 1921. The general health of the community continued to be satisfactory. Influenza of a mild type prevailed in January and February to a moderate extent. One case of measles and one case of diphtheria was found, but no further cases followed.—*Lancet*, 1:265, (Feb. 2) 1924.

✤

Public Health in New Hebrides, 1921-1922.—The following diseases are endemic in New Hebrides: tuberculosis, malaria, filariasis, amoebiasis and yaws. These five are, with pneumonia, the chief causes of sickness in the group. Cerebrospinal fever, influenza, whoop-

ing cough, and mumps have appeared in epidemic form in 1921 or 1922. Tuberculosis accounts for one-third of all the deaths that occur in the hospital. Besides the pulmonary disease, which is most common, inflammation of the cervical glands is often met with. Malaria is the most widespread disease. Syphilis appears to be rare, but gonorrhea is becoming increasingly common.—*Lancet*, 1:265-266, (Feb. 2) 1924.

✤

Age Distribution in Canada According to the Sixth Census.—Three principal factors, more or less closely related to the war and resulting consequences (a) fluctuations in the birth rate; (b) cessation of immigration during the war period, and (c) losses occasioned by the war and epidemics have seriously influenced the variations in age constitution. From 1881 through 1901, the per cent of male population at ages 20-34 did not vary greatly, being about 24 per cent of the total male population. In 1911 the proportion was 28 per cent for the age group 20-34 years, 10.17 per cent for the ages 20-24, 9.76 per cent for 25-29 years and 8.18 per cent for 30-34. By 1921, however, the distribution was as follows: 7.77 per cent for 20-24; 7.69 per cent, 25-29 and 7.60 per cent, 30-34. The per cent of females in these age periods had declined in the same way although the difference between 1921 and 1911 was not so marked. The ratio of males to females gradually rose from 1881 when there were 50.6 per cent males and 49.4 per cent females to 1911 when there were 52.9 per cent males and 47.1 per cent females. In 1921, it had fallen to 51.5 per cent males and 48.5 per cent females.—*Sixth Census of Canada Bull. XIV.*

✤

Tuberculosis in the Netherlands.—The Netherlands death rate from tuberculosis of all forms during the five year period 1901-1905 averaged 196 per 100,000 in the male population and 185 in the female population. The tuberculosis mortality here, as elsewhere, had been steadily falling up to the time of the war, and the 1914 rate was 136 among males and 143 among females. During the general shortage of food the mortality from this disease rose sharply until 1918, when the death rate among men was 40 per cent higher than that of the pre-war year of 1914 and that of women 50 per cent. After the war, however, the rates subsided and the 1920 death rate of 145 was nearly as low as the 1914 rate.

In the five Dutch cities of more than 100,000 population, tuberculosis took a greater toll during the war than in the country sections. The tuberculosis death rate of Rotterdam rose to 252 per 100,000 in 1918, an increase of the rate for 1911-1914 of 71 per cent. In Amsterdam the tuberculosis death rate of 1918, of 231 was 52 per cent higher than that of 1915. The mortality, however, in 1921, had fallen to 125, or by almost half from the war peak. It may be noted that at the beginning of the twentieth century, the tuberculosis mortality in Holland was almost equal in each sex, but that since the war the death rate from this cause among women never exceeds that among men.—*Bull. N. Y. Tuberc. Assoc.*, 5:16, (Jan.-Feb.) 1924.

✤

Cancer in Switzerland.—In the last 10 years in Switzerland there has been an average death rate from cancer of 12.8 per 10,000 or 1 cancer death to 780 inhabitants. The cancer mortality is 8.9 per cent of the general mortality and 14.1 per cent of the mortality of persons above forty years of age. In Switzerland these is a slight preponderance in the mortality of the male sex. It is possible that the reason for this is that with women cancer of external organs, more easily accessible for diagnostic means, is more common. Seventy-three per cent of cancer in men belongs to the gastro-intestinal tract, and 50 per cent in women. The increase in cancer is confined to cancer of deep organs and results probably from more perfect diagnosis. Sarcoma and carcinoma bear the same relation in both sexes, cancer being sixteen times more frequent than sarcoma. In Switzerland the absolute number of deaths from cancer is 4,700 per year, from sarcoma 300.—*Lancet*, 1:357, Feb. 16, 1924.

✤

Health Situation in 1923.—*Illinois.* The death rate of 12 per 1,000 in Illinois for 1923 is higher than that for 1922 (11.3) but lower than that for any other year except 1921. Chicago for the third successive time reported a rate lower than that for the remainder of the state, 11.7 and 12.3 respectively. The birth rate in Illinois fell from 20.1 in 1922 to 19.4 in 1923.

Pneumonia, influenza and tuberculosis were, in the order named, outstanding among the causes of death for which increased mortality was reported. Sharp rises in deaths from measles and whooping cough were reported, with slight rises in mortality from typhoid fever, cerebrospinal fever and syphilis. Definite declines were reported in deaths from diph-

theria and scarlet fever. It is interesting to note that in Chicago where intensive anti-tuberculosis work is done, tuberculosis mortality increased at the average rate of 2 deaths per week while that for the remainder of the state rose at the rate of 2 per day.—*Illinois Dept. of Pub. Health Bull.*, Feb. 16, 1924.

Topeka, Kansas. The crude death rate in Topeka, Kansas, for 1923, 14.1, was lower than any rate during the years 1915-1923 with one exception, a rate of 14.0 for 1921. The rate for 1922 was 14.8. The birth rate was unusually high, 25.3, the rate nearest it for the period 1915-1923 was 24.7 in 1915. The infant mortality fell from 89 in 1921 and 75 in 1922 to 70 in 1923. Although the tuberculosis death rate has been rising since 1920 when a rate of 57.9 per 100,000 was reported, the 1923 rate of 51.4 shows a downward trend has begun. Other diseases for which there were reported fewer cases and deaths in 1923 than 1922 were smallpox, scarlet fever, influenza, typhoid fever, pneumonia and diphtheria. Whooping cough, however, rose from 79 cases and 1 death in 1922 to 921 cases and 7 deaths in 1923; measles cases from 11 in 1922 to 483 in 1923, chickenpox cases from 352 in 1922 to 434 in 1923, mumps from 11 cases in 1922 to 92 in 1923, poliomyelitis from 1 case and 1 death in 1922 to 37 cases and 1 death in 1923.—*Topeka Health Report*, 1923.

Milwaukee, Wisconsin. The year 1923 in Milwaukee showed a higher birth rate as well as a higher death rate. There was an increase of 1,130 births. Against this however, the year 1923 shows a rate of 10.8 deaths per 1,000 as against 9.8 for 1922. Over half of this increase in deaths is chargeable to the diseases of the heart and blood vessels, the pneumonias and cancer. Early infancy also contributed 110 more deaths over last year's record.

Of the communicable diseases, measles and scarlet fever have been the outstanding ones in prevalence. Diphtheria also showed an increase over last year. Whooping cough, chickenpox and mumps showed decided falling off in number. *Milwaukee Health Dept. Bull.*, 13:1-2, (Jan.) 1924.

✚

Cancer in Hongkong, Shanghai and Bermuda.—The mortality rate from cancer in Hongkong for the foreign population during the years 1911-1920 varies from 23.2 per 100,000 in 1913 to 88.9 in 1917, the 10 year average being 42.8. The rate among the Chinese averaged 9.1 for the 10 year period, ranging from 6.1 in 1914 to 11.5 in 1920. During the war period, however, the accuracy of estimates of the foreign population is doubtful. In Shanghai during the 11 year period 1911-1921 the average death rate from cancer among the foreign population was 66.2. The variation in the rate was large—from 50.0 in 1912 to 104.8 in 1914. In Bermuda the rates are divided by sex, the 1911-1920 average being 57.0 for males and 63.0 for females. These rates are for white and colored combined. Since however, the white population is almost negligible, the rates may be expected to conform to the colored death rate in the United States, and this is true on the whole.—Frederick Hofman, *J. A. M. A.*, 82:490-491, (Feb. 9) 1924.

SANITARY ENGINEERING

ABEL WOLMAN, C.E.

Status of Water Supplies in Quebec, 1923.—Construction of four filtration plants to serve 16,000 inhabitants was started and seven chlorination plants to serve 24,000 people were installed in 1923. Though the typhoid death rate has been decreasing constantly, further reduction will be slow on account of many small river supplies which will be hard to improve for economic reasons.—Theo. J. Lafreniere, *Canadian Eng.*, 46:273, (Feb. 26) 1924. A. W. B.

✤

Mechanical Filtration Plant, Lauzon, Que.—Plant of one million gallons capacity per day consists of high and low lift pumps, coagulating basin, three mechanical filter units, 48,000 gallon clear water basin, chlorinator and 500,000 gallon standpipe.—H. G. Hunter, *Canadian Eng.*, 46:279, (Feb. 26) 1924. A. W. B.

✤

Water Motors Inject Chlorine at Moncton, N. B.—To chlorinate the water injecting the solution against a static head of 35 to 37 lb., necessitated a much higher pressure to actuate the injectors of the chlorinating apparatus. High pressure is obtained by reciprocating pumps operated by water motors. These pumps are not subject to interruption in power and will automatically cease operation if discharge line is closed.—J. Van Benschoten, *Canadian Eng.*, 46:281, (Feb. 26) 1924. A. W. B.

✤

Modified Pre-Chlorination Treatment.—Combined treatment with alum and chlorine before filtration at the Toronto drifting sand filter plant was very successful during 1923. 0.5 grain of alumina sulphate combined with 0.2 to 0.4 p.p.m. of chlorine successfully handled turbidities up to 100 parts per million, producing a bright, bacteriologically satisfactory effluent, with increased rate of filtration, longer filter runs, lowest percentage of wash water and a considerable saving of alum. Tables show operating figures and costs for past four years.—Norman J. Howard, *Canadian Eng.*, 46:283, (Feb. 26) 1924. A. W. B.

✤

Sacramento's Filtration Plant.—Largest filtration plant on Pacific Coast, at Sacramento, Cal., with capacity of 48,000,000 gallons per day was placed in operation January 1, 1924. Water from American and Sacramento rivers flows by gravity from intake pier to low lift pumps. It is then sprayed into the air through aerator nozzles, passes through grit basin into storage basin, coagulating tanks, sedimentation basins, rapid sand filters, clear water reservoir and to high lift pumps.—George J. Calder, *Pub. Works*, 55:51, (Feb.) 1924. A. W. B.

✤

Studies of Outlets and Crops on Sewage Irrigated Areas.—Comparison of various types of sewage outlets in experiments conducted by Department of Agriculture. Table showing comparative crop yield for sewage irrigated and nonirrigated land, indicates a greater yield from the former.—George A. Mitchell, *Eng. News-Rec.*, 92:284, (Feb. 14) 1924. A. W. B.

✤

New Sources of Water Supply for Philadelphia Recommended.—Abandoning present intakes on Schuylkill and Delaware Rivers for a new intake from Delaware River above Trenton, together with 18 and 33 billion gallon storage reservoirs on Neshaminy Creek, is recommended for Philadelphia.—John C. Dunlap, *Eng. News-Rec.*, 92:290, (Feb. 14) 1924. A. W. B.

✤

Contamination of Beverages and Other Food with Zinc.—To determine the possibility and extent of contamination of beverages and food, the Bureau of Chemistry, U. S. Department of Agricuture, conducted a series of experiments. Tap water, distilled water, carbonated water, milk, orange and lemonade were placed in galvanized iron pails. Samples were examined for zinc at end of 17 and 41 hours, hydrogen-ion concentration and titratable acidity also being determined. Results indicate that quantity of zinc found after 17 hours increased directly with concentration of hydrogen-ions and titratable acidity. Pails used in experiments were visibly corroded and danger from metallic contamination of food is emphasized.—J. W. Sale and C. H. Badger, *Ind. & Eng. Chemistry*, 16:164 (Feb.) 1924. A. W. B.

Garbage Incinerator Program at St. Louis has Setback.—Objections to proposed location for the second incinerator and to operating results of existing incinerator, delayed action on bids for second of five proposed incinerators. Present incinerator located on river front has three furnaces supplied with forced draft from two fans drawing air from garbage storage bin and ash bin. Beneath furnaces are tracks for small dump cars which receive clinkers and dust and carry them to fill on the river bank. Eighty tons of garbage are handled by this plant the balance being delivered to contractors.—*Eng. News-Rec.*, 92:316, (Feb. 21) 1924. A. W. B.

✤

Responsibility of the Water Works Superintendent.—Filter plant operators must be as much concerned in health qualities of the water supply as a physician in his patient. For betterment of community and making water plants more efficient the operator should acquaint citizens with the qualifications and needs of his supply and plant. Paper presented at short course for water works operators, Waco, Texas.—J. Z. Martin, *Eng. & Cont.*, 61:369, (Feb. 13) 1924. A. W. B.

✤

The Public Works of the New Model Town, Mariemont, Ohio.—Mariemont, a development of 365 acres, just outside of Cincinnati, is an interesting example of modern town planning. Years of careful thought and planning and millions of dollars will be spent to provide a model town for citizens of moderate circumstances. Eleven miles of improved streets, various types of homes for 7,000 people, industrial area providing employment for 3,000 to 4,000 workers, parks, playgrounds, schools and churches are planned. Grid-iron water system costing $209,000 and two supply lines, from Cincinnati supply, costing $72,000, a sewer system costing $126,000, and storm water drainage system costing $249,000 are almost completed.—R. W. Horne, *Am. City*, 30:247, (Mar.) 1924. A. W. B.

✤

Small-City Park Development Through Community Coöperation.—Coöperation of various civic agencies with the City Community Planning Commission resulted in a comprehensive plan for development of parks and general civic beautification in Pendleton, Ore. Plan when completed will give one of best systems of parks and playgrounds found in any community of the same size.—H. E. Inlow, *Am. City*, 30:262, (Mar.) 1924. A. W. B.

✤

Modernizing a West Virginia City.—Public agitation and willingness to pay for improvements effected a remarkable transformation in Clarksburg, a city that had "just grew." Sewers which had been placed indiscriminately along the streets by private owners were replaced by a separate sewerage system, streets were paved and old narrow unsightly bridges were replaced with modern designs.—Charles F. Mebus, *Am. City*, 30:274, (Mar.) 1924. A. W. B.

✤

Improvements in the Water Supply of Ogden City, Utah.—Water obtained from 34 flowing artesian wells located in Ogden Canyon, 10 miles from city, was not able to meet increasing need of the city. After experiments, air lift pumps were installed, the installation not interfering with the natural flow when it was sufficient to meet the demands. The results obtained in 1922 from 8 wells so equipped were so satisfactory that 28 more were installed in 1923.—B. B. Brewster, *Am. City*, 30:279, (Mar.), 1924. A. W. B.

✤

Fourth Class City—First Class Ideas.—Within less than a year, under present administration, two miles of sewers, artesian water system, a park containing band stand and comfort station, a municipal playground used for a skating rink in winter, removing of telephone poles and wires from streets to alleys and a white way lighting system have been added to the municipal improvements of Sturgeon Bay, Wis.—Earl M. LaPlant, *Am. City*, 30:300, (Mar.) 1924. A. W. B.

✤

Public Health Helps for Municipal Officials—Part II.—Food sanitation, general sanitation and keeping of vital statistics are discussed. For routine inspection of food a scoring system is recommended whereby a certificate of rating would be issued and inspection could be centered on those having lowest scores. Prompt attention to complaints of nuisances is advised to retain confidence of general public. Standard of health practice and procedure should be followed by communities.—Dr. Carl E. McCombs, *Am. City*, 30:306, (Mar.) 1924. A. W. B.

Cross Connection and Typhoid Again.—Relatives, etc., of typhoid victims are suing city of Fort Wayne, Ind., and Pennsylvania Railroad, for $65,000 for supplying a polluted water and causing typhoid fever outbreak. Complaint charges city with allowing railroad to cross connect its private supply with public supply and a faulty valve allowed polluted river water to enter city mains. More than 150 cases and 22 deaths in November and December emphasize the danger of permitting cross connected supplies.—*Eng. News-Rec.*, 92:348, (Feb. 28) 1924. A. W. B.

✤

New Sedimentation and Coagulating Basins at Toledo.—Supplementary coagulating and sedimentation basins recently added to filtration plant bring capacity up to 56 m.g.d. New basins operated in parallel are nonbaffled units and receive a valve-controlled supply. Sludge outlets are placed at the point where measurements in the old basins indicate the maximum depth of deposit will be formed. One foot per minute is velocity of travel through basins under maximum conditions, and the retention period is 7.2 hours.—George Nelson Schoonmaker, *Eng. News-Rec.*, 92:443, (Mar. 13) 1924. A. W. B.

✤

Foul Tastes in Cleveland Water Again Caused by Phenol.—By-product coke-oven wastes are carried by wind and ice movements which diffuse them into purer water around intakes in Cuyahoga River. Disinfection of the supply by chlorine produces chloro-phenolic compounds causing foul tastes. Several hundred thousand dollars have been expended to prevent discharge of phenol wastes into the river.—J. W. Ellms, *Eng. News-Rec.*, 92:453, (Mar. 13), 1924. A. W. B.

✤

Educating Public Opinion as to Engineering Works.—Many engineering projects have failed to gain public favor because the definite purpose of the project was not clearly defined. Various methods employed by Urbana and Champaign (Ill.) Sanitary District, of keeping taxpayer informed as to nature and progress of project and advantages to be gained are described. Hard roads, paved streets, street lighting, storm drainage, sewerage, water supply, etc., cannot be enjoyed without paying for them.—Gustav H. Radebaugh, *Eng. News-Rec.*, 92:454, (Mar. 13) 1924. A. W. B.

Direct Oxidation Tests at Toronto.—Tests carried on under direction of Provincial Board of Health of Ontario at Toronto experiment station. Purpose: study the process to determine its limitations and to investigate lime precipitation under approximately identical conditions of raw sewage. Sewage received from combined intercepter was pumped into double chamber tank. One-quarter inch square mesh wire screen was installed between grit chamber and overflow compartment of tank, lime being added as sewage passed this screen. Air diffuser plates in overflow compartment, with a continuous application of compressed air insured thorough mixing and prevented premature sedimentation. From overflow compartment sewage was divided, a portion passing to electrolyzer and balance to settling basin, the electrolyzer effluent being again separated, one portion going to the settling basin and the balance to the sewer. Operating precedure and complete data on analyses of samples collected are given and compared with other methods of sewage treatment.—F. A. Dallyn, Geo. A. Johnson, A. V. Delaporte, *Canadian Eng.*, 46:243, (Feb. 19) 1924. A. W. B.

✤

Activated-Sludge Progress in Ontario.—Ontario has 7 municipal and 11 institutional activated-sludge plants, with a total capacity of 10,235,000 gallons daily.—*Eng. News-Rec.*, 92:368, (Feb. 28) 1924. A. W. B.

✤

London Water-Works Enlargements.—Extensions completed or under way include several new pumping units, a large reservoir, various intakes and conduits and double filtration plants. Eighteen primary filters are of rapid sand type with capacities between 1.2 and 2.4 m.g.d. Six secondary filters are of slow sand type.—*Eng. News-Rec.*, 92:368, (Feb. 28) 1924. A. W. B.

✤

Development of Water Purification.—Water purification progress from first sand filter established in London, ninety-five years ago, to present time. Chlorination of water for elimination of bacteria was started fifteen years ago. Statistics by Department of Commerce covering entire registration area show a reduction in typhoid fever death rate from 35.9 in 1900 to 7.5 per 100 000 in 1922.—George W. Fuller, *Canadian Eng.*, 46:321, (Mar. 11) 1924. A. W. B.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASES

DRS. E. R. HAYHURST and N. C. DYSART

Distribution of Air in Metal-Mine Ventilation (Flexible Tubing Methods).—(1) "Blind ends" include most of the working faces in metal mines and, in general, they are unventilated except that a limited amount of compressed air (approximately 100 cubic feet per minute) is liberated during part of the working shift.

(2) These unventilated "blind ends" constitute by far the greater proportion of the places in metal mines at which the workers encounter the unhealthful conditions which cause so much more disease among metal than among coal miners.

(3) The unhealthful conditions in these "blind ends" in metal mines are one or more of the following: Stagnant air; air with excessive CO_2 from strata or breathing of men; air with CO or other poisonous fumes from blasting or other source; air with oxygen greatly depleted; high temperature or high humidity air or air impregnated with minute particles of rock dusts which, when breathed, cause bronchitis, miners' consumption or other diseases.

(4) Use of flexible tubes with small blowers furnishes probably the most efficient and most economical method to date for ventilating "blind ends."

(11) It has been found by investigators that even when air is practically saturated with moisture and with temperature up to 90° F., the giving of velocity of a few hundred feet per minute allows of performance of work with little or no unfavorable effect, while working in stagnant air above 80° F. has definite ill effect especially on body temperature and pulse beat, and to a less extent on blood pressure. Hence for such places the use of flexible tubing is of decided benefit.

(12) Investigators in South Africa found that merely by giving of movement of a few hundred feet per minute to practically saturated air in which native laborers were working, air temperature being about 87° F., the men delivered about 45 per cent more work than in stagnant air yet did not *know* of the change in conditions or that they were working more vigorously. This illustrates the efficiency of *movement*.

(13) With increasing comfort of working places and decreasing of unhealthful conditions brought about by ventilation by flexible tubes, there is greatly decreased labor turnover and discontent; decrease of temporary illnesses such as headaches, nausea, etc.; and decrease of lost time while underground, as well as of days absent from work.

(14) When the air of working places is hot, stagnant and impure, there is danger of excessive accident occurrence which is removed upon giving of adequate ventilation by flexible tubing system.

(16) Mining companies, both where air is hot and humid and where the air is cool but impure, have found efficiency of workers so greatly increased by installation of fan and tubing systems that there has been not one case of abandonment of the system, though there are several hundred instances at hand of its adoption.—D. Harrington, Serial 2551, *U. S. Bur. of Mines* (December) 1923.

✚

Effective Temperatures for Still Air Conditions and Their Application to Mining.—Human comfort or discomfort depends largely upon body temperature, and therefore upon the relation between the rate of heat production within and dissipation from the body. In order to maintain a constant body temperature, the loss of heat must equal the heat produced. It is therefore apparent that any interference with the elimination of heat from the body is accompanied by a rise in temperature and a feeling of discomfort. There are three principal factors affecting loss of body heat, namely—(1) temperature, (2) humidity, and (3) air motion. From these premises it is concluded that there must necessarily exist certain combinations of temperatures and humidities which will produce the same total body heat, loss by radiation, convection, and evaporation; and therefore the same feeling of comfort or discomfort. Lines passing through such air conditions, plotted in the form of a psychrometric chart, may be called *equal comfort* or *effective temperature lines*. This ten-page serial with accompanying figures and charts bears the following conclusions:

1. Comfort, as determined by both sense and physiological reactions, depends solely upon effective temperature. At 32 degrees, the effective-temperature line coincides with the dry-bulb temperature line; hence, in this particular case dry-bulb temperature is the only factor in determining comfort.

2. In the comfort zone, comfort depends equally upon wet and dry-bulb temperatures.

3. At about 132 degrees the effective temperature coincides with the wet-bulb temperature, and for this case the wet-bulb temperature is the only factor.

4. Below 32 degrees the effect of humidity is reversed—that is, the lower the humidity the greater the feeling of warmth.—Houghten, Yaglaglou and Sayers, Serial 2563, *U. S. Bureau of Mines* (January) 1924.

✤

Cooling of Mine Air.—1. The effective temperature of a ventilating current in mine working should not exceed 80° F. if possible.

2. With the effective temperature at 80° F. and below necessary variations in the cooling power desired can be secured by varying the velocity of the ventilating current.

3. When the effective temperature exceeds 85° F. reasonable velocity will suffice to maintain adequate cooling power and steps should be taken to decrease the effective temperature.

4. Under the conditions prevailing at the St. John del Rey Mine, Brazil, it has been found practicable to reduce the effective temperature through refrigerating the incoming air, thus reducing the moisture content and dry-bulb temperature.

5. Various suggested methods for reducing the effective temperature, such as the use of liquid air, lowered pressures, and local refrigeration, are not practicable from the mechanical standpoint.—T. T. Read and F. C. Houghten, Serial 2554, *U. S. Bureau of Mines* (December) 1923.

✤

The Elimination of Carbon Monoxide from Blood, by Treatment with Air, with Oxygen, and with a Mixture of Carbon Dioxide and Oxygen.—1. Recovery from carbon-monoxide poisoning depends to a great extent upon early elimination of carbon monoxide from the blood.

2. The rate of elimination of carbon monoxide from the blood depends upon the percentage of exygen in the air breathed, also upon the rate and depth of respiration.

3. Pure oxygen causes the elimination of carbon monoxide about four times as fast as normal air, when breathed by persons who have been gassed until 35 or 40 per cent of the hemoglobin in their blood has been combined with carbon monoxide.

4. Breathing a mixture of oxygen containing 8 to 10 per cent of carbon dioxide causes deep and rapid respiration.

5. Breathing a mixture of oxygen and carbon dioxide (8 to 10 per cent) causes the elimination of carbon monoxide about five to six times as fast as normal air, when breathed by persons who have been gassed until 30 to 40 per cent of their blood has been combined with carbon monoxide.

6. It is recommended that all victims not under a physician's care be caused to breathe oxygen in the purest form available for at least 20 to 45 minutes.

7. It is recommended that physicians use the carbon dioxide-oxygen mixture where possible, and note the results, but when this mixture is not available that they use pure oxygen.—R. R. Sayers and Y. P. Yant, Reprint 865, *U. S. Pub. Health Service* (September 7) 1923. (24 pp.).

✤

Carbon Monoxide Hazards from House Heaters Burning Natural Gas.—Carbon monoxide is produced when any carbonaceous substance burns without a sufficient supply of oxygen. Slow burning with little heat creates more carbon monoxide than quick burning with great heat. Likewise more carbon monoxide is generated by fires in confined rooms than there is in places where the air is moving. Tests made by Sayers and others upon persons who were not exercising showed that exposure to 0.02 per cent of carbon monoxide for six hours produced very mild subjective symptoms of poison such as yawning, slight tightness across the forehead and sleepiness. Slight headache may also occur. In view of these facts, the proportion of the gas in rooms should never exceed one one-hundredth of 1 per cent (0.01 per cent). In this report this value is taken as the safe limit.—Natural gas does not contain carbon monoxide or other unsaturated hydrocarbons. The amount of air necessary for the complete combustion of 1 cubic foot of natural gas of average composition is 10.14 cubic feet. If a gas heater is burning gas at a rate of 20 cubic feet per hour, then 10.14 x 20 gives 202.28 cubic feet of air

per hour, or 3.38 cubic feet per minute will be required for complete combustion.—The present paper discusses the methods of making tests on six common types of heaters: (1) Lava-Tip, Yellow Flame Heater; (2) Metal-Inclosed Blue Flame Heater; (3) Asbestos-back Yellow-Blue Flame Heater with a Metal and Mica Guard in front; (4) Cylindrical, Blue Flame Bath Room Heater; (5) Radiant Heater having Ten So-Called Radiants (Clay Glowers); and (6) Blue-Flame Radiator Heater Used in Connection With a Hot-Water Radiator. The time required to extinguish the gas flame of a heater in a closed room was determined in connection with each type, also whether or not the given type would yield carbon monoxide under ordinary conditions of use before the flame became extinguished. Tightly closed rooms may eventually reduce the oxygen to a point where the flame will go out. In general, the number of air changes that take place in a given room may vary from a half to three or more an hour. Much depends upon the type of house construction. All of the tests at one-half air change an hour show that dangerous quantities of carbon monoxide would accumulate in a room of 1,000 cubic feet capacity in a period of five hours. The tests showed that the gas increases rapidly at first, then approaches a constant that is not exceeded because an equilibrium in air exchange is reached. It was found that an odor of "gas fumes" may not be present at a time when limited amounts of carbon monoxide may be present. It was also concluded that carbon monoxide is not present in dangerous quantities when aldehyde odors or "gas fumes" are not detectable. (However, the report does not discuss the possibility of becoming so inured to these odors by the person habitually in the room as to render their detection unnoticeable. —*The Abstractor.*) Furthermore a slight odor was often found when no carbon monoxide was found. A slight odor from radiant heaters indicates more carbon monoxide than an odor of equal strength from other types of heaters. Heaters burning with a yellow flame and at a low temperature may give off gas fumes, yet produce very little carbon monoxide. Radiant heaters, when operated so that the radiants glow only three-fourths of the length from the bottom to the top and when adjusted so as to use eight or more volumes of primary air, can be safely used without flue in a well ventilated room. If the heater is so operated that the radiants glow the entire length, or is so adjusted that the amount of primary air is small, it should be connected to a flue. All heaters should be so constructed that an ample supply of secondary air is drawn into the flame to insure complete combustion. Natural gas should not be burned in any device when this is not the case. When a heater is connected to a flue, a large part of the heat goes up the flue and so is lost. To keep this loss to a minimum there should be a damper in the flue; after the heater is lighted the damper should be gradually closed until the products of combustion move slowly into the flue—a matter that can be determined by blowing tobacco smoke into the space above the flame and noting whether it is drawn into the flue or comes out into the room. Another method of saving a large part of the heat is to use a longer flue connection with several bends in it and thus enable much of the heat to pass into the room before the hot gases reach the chimney. A natural gas heater should never be used in a room in which a person is sleeping unless it is connected to a flue or one or more windows are opened.—Jones, Berger, and Holbrook, Technical Paper 337, *U. S. Bur. of Mines* (December) 1923. (31 pages.)

✣

Poisoning from Small Quantities of Mercurial Vapor.—Daily exposure to an atmosphere containing as small a quantity as 0.02 milligram of mercury per cubic foot of air results in signs and symptoms of poisoning. The histories indicate that daily exposure must continue for two or three months, or more, before symptoms appear. The objective symptoms of chronic mercurialism are manifested by a copper-colored membrane of the throat and gums. The gums are swollen and show small erosions. Abscesses frequently occur. The flow of saliva is occasionally increased. The blood and urine are unaffected. Subjective symptoms include tenderness of the gums and teeth, particularly those containing amalgam fillings. Mild attacks of diarrhea followed by obstinate constipation during absence from the exposure, accumulations of gas with pain in the gastrointestinal tract and neuralgic pains in various joints and the chest, may be present. All apparatus in which mercury is used should be enclosed and any fumes conveyed away from the worker's face.—J. A. Turner, *U. S. Pub. Health Reports*, 39: No. 8: 329 (February 22) 1924.

Relative Dangers of Lead and Turpentine in Painting.—The effects of turpentine vary according to the amount introduced into the system and may give rise to nephritis, bloody urine, and increased blood pressure. That these effects may be produced by the inhalation of turpentine fumes into the system is controversial. The writers examined 35 workers who had handled either turpentine alone or in connection with white lead. They came to the conclusion that the inhalation of turpentine *fumes* has a negligible effect in comparison with that of lead and that to the latter poison the diseases in question should be wholly or at least namely attributed. (A distinction, however, should be clearly made between the breathing of fumes and the breathing of particles such as occur in the air from spray painting or atomizing machines.—*The Abstractor.*)—Heim, Agasse-Lafont, and Feil, in Presse Medicale (June 16) 1923, by *International Labor Review*, 8, No. 4: 589 (October) 1923.

✚

A New Theory of Miner's Nystagmus.—The author puts forward a theory which is entirely opposed to accepted views on this subject, *i.e.*, that nystagmus is due to inadequate illumination. He believes it to be due to anoxemia from carbon monoxide poisoning. This gas is known to produce anoxemia, which in turn produces alteration in the higher brain centers, with liberation of the lower centers so that changes in the reflexes occur. Nystagmus may be an occupational neurosis. Other things being equal, bituminous coal gives off the largest amount of carbon monoxide. The author produces figures to illustrate the close connection between the instance of nystagmus and the percentage of volatile matter in the coal. The affliction is more frequent among hewers than among other grades of miners. The affliction does not invariably occur in coal mines and may be entirely absent. It frequently occurs in deepest parts of the mine where the supply of fresh air is least. It also occurs at times among coke burners. The most acute cases are found where the greatest general and symptomatic disturbances occur. Furthermore the affliction appears to have no specific relation with hours of work and the nature of the illumination. He produces figures to show that the introduction of electric lighting has not reduced the number of cases, which has, indeed, increased in the coal fields of the British Isles. Obviously more consideration of this subject is necessary.—Dr. Frederick Robson, from the Lancet (May 12) 1923, through *International Labor Review*, 8, No. 4: 591 (October) 1923.

✚

White Men and Work in the Tropics.—White men suffer more often from heat stroke in the tropics than do natives. Is this due to greater difficulty in adjusting the heat-regulating mechanism of the body? Knipping of the Physiological Institute of the University of Hamburg is quoted as saying that after numerous investigations by many men, there has been found no material difference in the heat-regulating mechanisms of white and colored men, though the latter probably have more sweat glands and larger cutaneous capillaries. In the stokerroom of a boat on the Red Sea, temperatures of men rose to as high as 101.8° F. There was not enough air supply. Even here men in good health who took care of themselves did not get heat stroke. Colored firemen escape because they do not work so hard; they do rarely more than half a white man's task. This is a protective measure which the white man from the temperate zone fails to avail himself of. Dr. Knipping reaches the conclusion that, for any climate, the maximum safe output of work is a function of the drying power of the air, in relation to the temperature of the atmosphere and its rate of movement. This is a very important question in reference to colonization.—R. N. *The Lancet*, 5236, 51 (Jan. 5) 1924.

CHILD HYGIENE

TALIAFERRO CLARK, M.D.

D'Espine's Sign.—Observations on the significance of D'Espine's sign are not comparable unless there is a uniform understanding of the phenomenon. As originally described the sign consisted of a whispering echo following the spoken voice on auscultation over the dorsal vertebra. Later, emphasis was placed on the value of the whispered voice, that is, "The sign is most obvious if one makes the child speak or count in a low whisper. The voice is then accompanied by an added whispering sound."

The occurrence of D'Espine's sign was investigated in 411 children under observation in the State Tuberculosis Sanatorium, Meriden, Connecticut, from July 27, 1920, when the institution was converted into a sanatorium for children under fourteen years of age, until March 2, 1923. In the cases reported there was little, if any, difference in the incidence of postphonal whispered echo and the abnormal transmission of tracheal timbre with the whispered voice. Transmission of the tracheal timbre is indicative of abnormality only when it occurs below the seventh cervical vertebra in young children, below the second dorsal spine in children of eight, and below the third or fourth dorsal vertebra in children of the twelfth to fifteenth year. These differences are due to the descent of the bifurcation of the trachea with increasing age. It must be emphasized also that the mere transmission of vocal resonance does not constitute D'Espine's sign. It is the transmission of the characteristic tracheal timbre which counts.

Of the 411 children under observation, only 50, or 12.1 per cent showed a positive D'Espine's sign. This fact indicates that the sign does not occur indiscriminately.

Of the cases on which X-ray evidence was available 81.6 per cent showed undoubted evidence of hilum disease, when judged by a rigid standard. Therefore, the sign should not be disregarded in the diagnosis of hilum tuberculosis. When combined with X-ray evidence of abnormality, with a positive skin tuberculin test, the manifestation of toxemia not otherwise explained, and when there either is or is not a definite history of exposure to either form of tuberculosis, the diagnosis of hilum tuberculosis is established even in the absence of all other physical signs of abnormality in the lungs.—D'Espine's Sign in Hilum Tuberculosis, W. E. Carroll, and C. B. Gibson, *Boston Med. & Surg. Journal*, (February 28) 1924.

✤

Squint in Young Children.—A squint in a young child is of importance because of its unsightly appearance, the association with errors of refraction and defective vision and also because it is not infrequently due to organic nerve disease. Squint may be classified as concomitant or paralytic, but these two classes have nothing in common. Concomitant squint comes within the province of the ophthalmologist whereas the paralytic form must be considered by the neurologist.

In concomitant squint the two eyes move together to the same degree, the angle between them remaining more or less constant and there is no limitation of movement. On alternately shading the eyes the shaded eyes converge or diverge to the same extent. On the other hand, in case of partial or complete paralysis of one or more eye muscles, the paralyzed eye will show a limitation of movement in one direction, and the eyes do not move together to the same degree and if they be alternately shaded, the secondary deviation will be found to be greater than the primary. It is important to note that children suffering from partial paralysis of an eye muscle, generally, but not always, complain of double vision.

It is probable that heredity is a pronounced factor in the incidence of concomitant convergent squint. Many children show no sign of any desire for fusion. If there be no desire for fusion the eyes have no directing force towards any given object. Furthermore, if the vision of one eye is better than the other that eye will be used for fixation to the complete neglect of the other, which may not only assume a false position but may deteriorate in function. A child is not born with a fully developed fusion

faculty but at six months it has fair binocular vision.

Age of Onset. During the first six months of life, when binocular vision is undeveloped, the child frequently shows occasional strabismus, but any malposition of the eye at a later age, especially if constant, should awaken suspicion. In most cases it may be noted that the child began to converge at about three years old, after an illness such as measles and whooping cough, probably due to the effect of the debility caused by these diseases in weakening the muscle-nerve mechanism of the eye.

Defective Vision. Frequently the squinting eye has poor visual acuity, even after the most accurate correction of refraction errors. The amblyopia may exist in varying degrees. The acuity of the average amblyopic eye is 6/60. In some cases it is congenital and may or may not be accompanied by strabismus, but mostly it is acquired. The explanation is that the child rather than see double has suppressed the image from the errant eye resulting in loss of function. It develops rapidly in children under three years old, which makes early treatment essential.

Nonoperative Treatment. The methods of treatment must aim at prevention and cure of amblyopia and the correction of the deformity. As soon as a baby develops a permanent or even frequent squint, treatment must begin. The first essential is a careful estimation and correction of any error of refraction. The spectacles must be worn constantly. Babies wear special spectacles with short sides tied behind the head. No child is too young to wear a correction for hypermetropia, which is usually the deciding and ultimate factor in concomitant convergent strabismus. In fact, it is criminal to neglect a case in this stage when conditions are the most favorable for preventing the onset of amblyopia. After five years of age the prospects of cure are much less and treatment often fails.

The main difficulty with regard to defective fusion is that education must commence early, not later than three years old in most cases. The process at this early age is difficult and demands probably more patience both by parents and children than can usually be commanded.

Operation for Squint. When a squinter of moderate degree has received treatment for some years, at least a year in any case, an operation will have to be considered. The most suitable age for operation is eight. "It is generally fairly easy to operate upon a child of eight under local anaesthesia. Younger children are apt to be troublesome and older ones still more so. All depends upon temperament and early home training."—T. Harrison Butler, *The Lancet*, London, (February 21) 1924.

✤

Infantile Eczema.—The causative agent in infantile eczema is apparently least productive of symptoms under conditions of minimal skin and minimal gastrointestinal irritation. A specific foreign protein may occasionally be demonstrated clinically as the primary agent, and an associated allergy may be shown by skin tests. In a still larger group of cases will be found indications of the harmful effect of animal milk, without skin confirmation or allergy. In any event in addition to the avoidance of local irritation, the use of restraint to avoid scratching and the use of healing application, "notably crude coal tar," certain general procedures are indicated:

1. "Complete elimination of any protein to which allergy is demonstrated when this is possible, and reduction to the minimum consistent with health when impossible.

2. "In the infant where milk is involved, trying the milk of another animal, or much reduced milk protein or some altered milk.

3. "Treating by oral desensitization cases sensitized to egg white or milk or other important protein substances.

4. "In cases showing no evidence of protein sensitization giving a diet very low in animal protein and without preponderance of any one protein, as originally recommended by Blackfan.

5. "Using skin tests just as any other laboratory method as a guide to diagnosis and therapy; remembering that the method of trial and error in infant feeding is a very dangerous procedure and that many changes of diet may sometimes be avoided by the intelligent use of skin tests." Observations on Infantile Eczema, Harold C. Stuart, *Boston Med. & Surg. Jour.*, (March 6) 1924.

✤

Eczema in the Exclusively Breast-fed Baby.—Although it is well established that a large proportion of cases of eczema in

older children is due to protein sensitivity, such sensitivity is more difficult to prove in the nursing infant. However, well authenticated clinical observations seem to indicate that protein sensitivity is a factor in eczema of exclusively breast-fed infants. In other words, converging evidence tends to show the eczema in the breast-fed infant is an allergic condition due in part in some cases to foreign proteins in the breast milk; that this assumption is not in itself sufficient to account for eczema in the breast-fed; that sensitivity to proteins of human milk will account for many of the phenomena observed in eczema in the breast-fed; and, finally, that group sensitivity will explain many of the features which appear upon weaning.—Eczema in the Exclusively Breast-Fed Baby, Edward S. O'Keefe, *Boston Med. & Surg. Jour.*, (March 6) 1924.

✤

Public School Clinics.—In recognition of the rights of childhood as well as the duties of parenthood, and realizing the inadequacy of school medical inspection as formerly practiced in a state so largely rural, the North Carolina State Board of Health decided to organize school clinics for the purpose of correcting the most common physical defects which are admittedly recognized as handicaps to large groups of children. This work was organized and carried on without opposition other than "the contention of a few ultra-professional men that all such efforts on the part of the State agency tend toward State medicine" which was disregarded.

Since July, 1918, dental work has been carried on in practically every rural community, city and town in the State of North Carolina and more than 110,000 children have received free dental treatment. Furthermore, since the organization of the first tonsil and adenoid clinic approximately 7,000 children have been operated on in about 80 per cent of the counties, with but one death, and no other serious complication. In addition more than 1,000 children have had examinations made by competent oculists and were supplied with glasses when necessary. This work has received the indorsement of the medical profession of the State, through the State Medical Society, at three annual meetings within the last five years.

Of particular interest are the plans adopted for the adenoid and tonsil clinics. Instead of employing a single operator on a salary basis, a number of capable operators from different sections of the state are employed in their private capacity as surgeons with compensation at the rate of $100 a day and expenses, instead of paying them on a fee basis.

The cost of the operation to the individual is nil. A small fee of $12.50 for each operation is accepted when paid voluntarily by those having it to pay. By this method, if twenty children were operated on each day and three-fourths of them paid the fee, five children could be taken care of totally free at the expense of their more fortunate neighbors.

The age of acceptance for operation is six to twelve years inclusive. The idea is to extend the work as widely as possible throughout the state with the funds available, and to teach the necessity for the operation, when needed, at an early age. The children are selected from as many homes throughout the county as possible and no child is admitted except on terms of absolute equality with every other child.

The personnel of an operating unit consists of a specialist, an anesthetist, 8 nurses, and an orderly. The equipment consists of a one-ton truck with a special body, 25 cots, comforts to be used as mattresses, sheets, pillows and pillow cases, night gowns for the children, towels, blankets, operating table, sterilizers, tonsil suction, sterile supplies, ether and other needed supplies. The outfit is set up in any good building, preferably a school building, where heat, light, water, and sewerage, if possible, are available.

Approximately 25 children are operated on each day. One or both parents or other close relative is required to accompany the child who reports at the clinic without breakfast early in the morning. The parents seeing and knowing intimately what is going on are reassured.

"The nurse in charge of the county work handles the finances. She alone knows who pays the charge and who does not. The operator does not know and does not care which children are accepted for charity."

The school clinics are financed by the State Board of Health from funds appro-

priated by the legislature for the purpose. Many local boards and some city organizations during the past year supplemented these funds, particularly for the maintenance of dental clinics; that is, they are allowed to reimburse the State Board of Health at the rate of $75 per week for as many weeks as is desired for the dental clinic to remain in a given community after the expiration of the time allotted by the State Board of Health.—G. M. Cooper, *Nation's Health*, (Jan. 15) 1924.

✤

Qualifications for Public Health Nurses.—The following prerequisites for examination for certification as public health nurse in California have been recently adopted by the State Board of Health:

Applicants for examination for certificates as public health nurse shall be:

(1) Registered nurses under the laws of California;

(2) Shall have completed a public health nursing course of from four to eight months in a school approved by the California State Board of Health, or

(3) Shall have completed at least a semester (four months) of postgraduate work in social service, including theory and practical work, or

(4) Shall present evidence of having engaged in general public health nursing at least two years in connection with a public health organization approved by the State Board of Health;

(5) All applications for examination as public health nurse shall be filed in the office of the State Board of Health and shall be passed on by a committee of the board;

(6) On examination, credit of 5 per cent will be given to applicants who have completed a four months' course in public health nursing, and 10 per cent to applicants who have completed an eight months' course in public health nursing.—Medical News, *Jour. A. M. A.*, (Feb. 9) 1924.

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Extinction Tests in Scarlet Fever.—The discutient phenomenon obtained after the injection of normal or convalescent scarlet fever serum, intradermally, in a scarlet fever patient with a fully developed eruption was first described by Schultz and Charlton in 1918. The phenomenon consisted of the blanching of the skin, with a complete disappearance of the rash around the injection for an area of from 1 to 2 inches in diameter occurring within from 5 to 6 hours after the injection, and persisting while the scarlatinal rash lasted. A total of 133 scarlet fever cases were studied and compared with 22 control cases in an attempt:

1. To confirm the fact that injections of serum from acute cases of scarlet fever, injected intradermally in another case of acute scarlet fever in the exanthematous stage will not cause blanching.

2. To show that not all serums are similarly potent in producing blanching, few normal serums producing no blanching at all, a fact which limits the application of this test in its negative phase.

3. To show that the injection of normal serum in cases with rashes other than the scarlet fever rash does not cause the reaction.

4. To show that normal serums give a greater number of reactions than convalescent scarlet fever serum.

5. To show that normal serums in 1 c.c. amounts give a greater number of positive reactions than normal serums in 0.5 c.c. doses.

6. To point out that if the serum is used and produces a definite reaction in one case, it will produce the same reaction in nearly 70 per cent of other cases tried.

7. To point out that if two serums are used which produce definite blanching in a given case, they will complement each other and will give 100 per cent reactions in other cases tried.

The conclusions based on this study are as follows:

1. There is present in the blood of some normal and some convalescent scarlet fever serums a substance which, when injected intradermally, will cause the rash of scarlet fever to disappear at the seat of the injection, as first pointed out by Schultz-Charlton.

2. The serum from an acutely ill scarlet fever patient in the erythematous stage will in the great majority of cases not cause a disappearance of the rash when injected intradermally into another acutely ill scarlet fever patient in the erythematous stage.

3. The cause of this reaction is not known.—Extinction tests in Scarlet Fever.—John A. Toomey and John D. Nourse, *Amer. Jour. of Dis. of Children*, (February) 1924.

✤

A Twenty-four Hour Method of Treatment of Itch.—In 1920 Dr. Svend Lomholt described a twenty-four hour method of treatment of scabies and reported 678 cases treated without a single relapse. A dermatitis was observed in two patients treated with some poorly prepared ointment.

The ointment in use at the Massachusetts General Hospital is prepared as follows:

1. One kilogram of sublimed sulphur is mixed with 2 kg. of 50 per cent solution of potassium hydroxid (as free from water as can be obtained). Gentle heat is applied until reaction ceases and the solution becomes clear. When the process is complete, one should be sure that the sulphur is in excess to a slight degree.

2. Petrolatum 225 gm., is mixed with wool fat, 225 gm., without heat.

3. To this mixture is added 375 gm. of the solution of sulphur and potash mentioned above.

4. To 40 gm. of 20 per cent sodium hydroxid solution is added 28 gm. of zinc sulphate. The mixture is agitated thoroughly until reaction ceases, poured on filter paper, and washed thoroughly; then the washed precipitate is added to the foregoing.

5. Liquid petrolatum is added to obtain a total weight of 1,000 gm.

6. Five grams of oil of bitter almond is added to check the somewhat disagreeable odor of hydrogen sulphid.

At the Massachusetts General Hospital 84 cases have been treated, with three failures where the patient in each case did not follow directions.

It is quite common and necessary with scabies to treat the entire family, which is difficult to carry out thoroughly with the old three to five day treatment. It is in such circumstances that the twenty-four hour method of treatment is of most value. It is very necessary to be certain that there are no other cases in the family, if relapses are to be prevented; and if there are other cases then the entire family is to be treated. —The Danish Treatment of Scabies, Arthur M. Greenwood, *Jour. A. M. A.*, (Feb. 9) 1924.

✤

Organo-Therapy in Cases of Previous Miscarriage and Stillbirth.—A small number of expectant mothers with histories of previous miscarriage or stillbirth were treated at the Sheffield Maternity and Child Welfare Center with thyroid and ovarian extracts. The treatment consisted in the administration of from ⅛ to ¼ grain of thyroid extract and 5 grains of ovarian extract every night during the pregnancy. As a result of this treatment a live baby was born in 9 out of 10 cases; and the baby lived and did well in 7 out of 10 cases.

Of the 23 babies which might have been born to these patients previously, only 13 per cent were born alive and in approximately 9 per cent only did the baby live.

It is advisable to begin the treatment at five months or earlier, because of the tendency to have larger babies in contradistinction to the tendency for small babies in untreated cases.

The health of the mothers during pregnancy was greatly improved after they began the treatment. The Effect of Thyroid and Ovarian Gland Extracts in Cases of Previous Miscarriage and Stillbirth, Alice White, *Brit. Med. Jour.*, (February 2) 1924.

✤

Graduating babies.—"A 'graduation' party was given last autumn by the Baby Hygiene Committee of the San Francisco Branch, American Association of University Women, to its babies who were ready to advance from the infant to the runabout class."

The diplomas read as follows:

> "This is to certify that ..... has attended the Health Center from ..... to ....., and having reached ..... months of age is hereby promoted to the Runabout Center.

"There follow records of the baby's weight and height at various periods and the state of his teeth, meals and habits at 18 months. The whole is signed by the Chief of the Center and the Chairman of the Baby Hygiene Committee." —"Diplomas for Babies," *Child Health Magazine*, 5:79-80, (Feb.) 1924.

PUBLIC HEALTH LEGISLATION

JAMES A. TOBEY, LL.B.

GOVERNMENT REORGANIZATION

Reorganization of the administrative branch of the federal government was discussed at hearings held before the Joint Congressional Committee, January 7 to 31, 1924, and the printed report of these hearings, requiring nearly 800 pages, was issued late in March. As noted in this column in the March number of the JOURNAL, Dr. Hubert Work, Secretary of Interior, presented a plan for the expansion of his department to include a bureau of public health under the direction of the Surgeon General. A number of other witnesses also discussed health work in the governments. Mr. Hoover, for instance, stated he thought that normally public health should go to the Interior. Secretary of Labor Davis reported on duplication of activities by the Public Health Service and bureaus in the Labor Department, but called attention to the harmful effects in attempting to take the Children's and the Women's Bureaus from his department. Secretary of the Treasury Mellon stated he would favor the transfer of the Public Health Service to the Interior Department, in the absence of a welfare department. A number of persons notably W. F. Willoughby of the Institute for Government Research, advocated a new department of public health. Educational authorities who testified seemed agreed that school hygiene and physical education should be placed in a department of education. It seems likely, however, that none of these matters will get beyond the talk stage, at least not during this session of Congress.

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A DAIRY BUREAU

HR 7113.—At the request of several national dairy organizations, Representative Haugen, Chairman of the Committee on Agriculture of the House of Representatives, has introduced a bill to create a separate Bureau of Dairying in the Department of Agriculture. As the department is now constituted, this bureau is a subdivision of the Bureau of Animal Industry. Representative Haugen's bill would create a new bureau to be known as Bureau of Dairying and would confine its activities to the dairying industry and the dissemination of general information on that subject.

CLINICAL THERMOMETER

HR 7997.—A bill for the federal inspection and testing of clinical thermometers has been introduced in the House by Representative Kindred of New York. The purpose of the measure is to establish a high technical standard for clinical thermometers, which would be accomplished by placing the inspection in charge of the Bureau of Standards of the Department of Commerce. The bill fixes rules and regulations to be required by the Secretary of Commerce, which shall include specifications, reasonable tolerance or permissible variations, and designating marks to be placed upon thermometers as may be necessary.

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RECLASSIFICATION OF GOVERNMENT EMPLOYEES

In recognition of universal dissatisfaction with much of the work of the Personnel Classification Board, the House Committee on Civil Service has favorably reported a bill **(HR 6896)**, transferring to the Civil Service Commission, the powers and duties of this Classification Board. The Classification Law, passed at the last session, vested with the Board authority to classify into certain specified groups, all government employees. General dissatisfaction has existed for several months among government workers because of the apparent failure of the Classification Board to follow the directions of Congress in making appropriate classifications.

Among those who have sharply criticized the actions of the Classification Board are government nurses, and members of nursing organizations because, according to unofficial reports, nurses were placed in the nonprofessional group. On account of widespread objections, this classification of government nurses was subsequently changed by the Board. It should be understood, however, that the decisions of the Board were not final or official, and no report has been presented to Congress by the Classification Board, up to March 25th.

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EXECUTIVE MATTERS

Experiments in the use of chlorine gas for the treatment of common colds, are being carried on extensively by the Chemical Warfare

Service of the War Department at Edgewood Arsenal, Maryland. The work thus far has been experimental in its character, but the results are being carefully watched by medical officers of the Army and by physicians generally.

Up to the present time, more than one thousand persons have received the treatment at Edgewood, and the experiments carried on are declared to have been so successful as to warrant other tests to show the possibilities of chlorine gas as a cure, not only for common colds, but also of whooping cough and other ailments of the respiratory system. Recently, interesting tests have been made at Attending Surgeon's Division of the Army in the Munitions Building at Washington. A room has been set aside for patients to take this simple chlorine gas treatment. A small receptacle containing chlorine gas of definite and positive known strength, is permitted to escape in the atmosphere of the room. The patient breathes in a normal manner the air thus permeated with chlorine, remaining in the room for an hour each day. The results are said to be beneficial in many cases.

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COURT DECISIONS

Night Work of Women.—The United States Supreme Court, in the decision in *Radice vs. New York* has upheld the right of the states to prohibit night work of women as a public health measure. The statute which was assailed by the plaintiff prohibited women from working in restaurants, in first and second class cities in New York State, between the hours of 10 P.M. and 6 A.M.—exception being made for singers and cloak room attendants. This law was challenged as contravening the Fourteenth Amendment of the Federal Constitution by violating the due process clause, by depriving the employer and employee of liberty of contract; and also by violating the equal protection clause by unreasonable classification of certain persons. The Court asserts, however, that the State Legislature had a right to decide that night work of women was injurious and acted within the police power in prohibiting it. The Court further says that there was no unreasonable discrimination in applying the law only to first and second class cities, nor by the exemption of singers and cloak room attendants, whose conditions of work are considered different from waitresses.

Procedure.—A Connecticut case, *State vs. Tyrell,* 122 A. 924, holds that an information charging unlawful vending of milk in a city without a license, contrary to an order of the board of health, which gave neither terms nor substance of the order, was bad. It is important to remember in bringing prosecutions to be definite and complete in the allegations in the complaint or information.

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Municipal Health.—Municipalities act as agents of the state in matters of public health, according to a Michigan case, *Attorney General vs. Detroit,* 196 N. W. 391. This is a well established rule of law in connection with police power.

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STATE COMMISSIONS ON CHILD WELFARE LAWS

The U. S. Children's Bureau has issued a new pamphlet (Bureau Publication No. 131) on state commissions for the study and revision of child welfare laws. The pamphlet tells of the development and methods of work of these commissions, outlines essential features in programs, gives summaries of organization and plans, a list of the commissions, compilations and summaries, and much other useful information. It should be in the hands of any person interested in child health legislation.

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Serious Typhoid Epidemic Caused by Drain-Sewer Connection.—Santa Ana, Calif., of 15,500 population has a severe dysentery and typhoid fever epidemic, 230 cases of typhoid being reported in three weeks, due to contamination of water supply. Source of pollution was traced to a drain in overflow chamber around the top of the casing of one of the wells yielding city's water supply. This drain was constructed years ago to catch spillage from the well which was then a flowing well. Overloading of the city's sewer by storm flow created a back pressure which caused the sewage to fill the overflow chamber and enter the well, being pumped for seven hours into the distribution system. An emergency hypochlorite plant was installed immediately upon discovery, all pumps being opened and sprayed with hypochlorite, the contaminated well was disinfected and plugged with concrete, the reservoir was drained and the entire supply was disinfected.—*Eng. News-Rec.,* 92:409, (Mar. 6) 1924. A. W. B.

STATE HEALTH NOTES

General

Mr. Francis F. Longley has just returned from Australia where he has spent the last two years under the auspices of the International Health Board making special studies on sanitary engineering and sanitation for the Commonwealth Government of Australia. Mr. Longley has been absent from America for approximately seven years during which time, in addition to his serving with the International Health Board, he served as Director of the Department of Sanitation of the League of Red Cross Societies, and also his two years army service in France. It will be recalled that Mr. Longley was formerly associated with the firm of Hazen and Whipple, Consulting Sanitary Engineers. Mr. Longley may be addressed in care of the International Health Board, 61 Broadway, New York City.

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Alabama

Mr. W. Thurber Fales of The Johns Hopkins School of Hygiene and Public Health has been appointed Director of the Bureau of Statistics of the State Board of Health, and assumed his new duties on April 1. Mr. Fales contributed largely to the preparation of the Committee on Municipal Health Department Practice of the American Public Health Association, particularily with regard to the section on expenditures of health departments.

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Illinois

Arrangements for the organization of a full-time county health unit in Sangamon county have been completed and Dr. R. V. Brokaw, who has been in charge of the activities of the Morgan county health department, has been employed to act as the medical director. Under the arrangement, the funds will be provided by the city of Springfield and by the local, extra governmental health agencies, consisting largely of Red Cross chapters, in the outlying districts. The plan provides for the coördination of all public health service now operating in the county and will definitely extend over a period of two years. This brings the total number of full-time county medical health officers in Illinois up to three, Morgan and Cook counties employing the other two.

At a recent meeting of the Cook county board of supervisors arrangements were completed for the employment of a full-time county health officer, under whose direction it is planned to coördinate all public health service now being done in the county.

Provisional figures, which are given out by the state department of public health as practically complete, indicate a general death rate of 12 per 1,000 population for 1923. This rate is appreciably higher than that for 1922, which was 11.3, but it is lower than that for any other year except 1921. Chicago, for the third successive time, reported a rate lower than that for the remainder of the state, 11.7 and 12.3 respectively, and this time the difference in favor of the city was greater than ever before. The increase in mortality in Chicago during 1923 amounted to 5 per 10,000 people while that for the down-state amounted to 9. Pneumonia, influenza and tuberculosis were, in the order named, outstanding among the causes of death for which increased mortality was reported. Deaths from pneumonia rose 1226 above those of the year before, while influenza and tuberculosis were credited with increases of 851 and 849 respectively. It is interesting to note that in Chicago, where intensive anti-tuberculosis work is done on an extensive scale, the tuberculosis mortality increased at the average rate of 2 deaths per week, while that for the remainder of the state rose at the rate of 2 per day. Fatal automobile accidents fell slightly in Chicago but increased 162 per cent down-state, giving a total increase of 224 for the state. Sharp increases in deaths from measles and whooping cough were reported, with slight rises in mortality from typhoid fever, cerebro-spinal fever and syphilis. Definite declines were reported in deaths from diphtheria and scarlet fever.

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Massachusetts

The State Department of Public Health will conduct a Summer Course in School Nursing at Hyannis Normal School from June 30th, to August 2nd. Information can be obtained from the State Department of Health.

The New England Health Institute will be held in Boston, May 5th to 10th. This Institute is carried on under the auspices of the State Health Departments of New England, the U. S. Public Health Service, Yale and Harvard Schools of Public Health, and the Department of Biology and Public Health of the Massachusetts Institute of Technology and Simmons College. There will be thirteen sections; each will meet for from five to nine hour periods during the week.

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Michigan

Two laboratories for the examination of water were recently established at Big Rapids and Alma. That raises the total number of such laboratories functioning throughout the state to forty-six.

Dr. Lillian Smith has been appointed to conduct mothers' conferences, prenatal clinics and occasional infant clinics for the Bureau of Child Hygiene and Public Health Nursing. Dr. Smith formerly was with the Department of Public Health in Worcester, Massachusetts. She also was with the Prenatal and Pediatric Clinic in the New England Hospital for Women and Children in Boston.

Dr. John I. Pinckney has resigned his position as tuberculosis specialist with the Michigan Department of Health. His new duties will take him to Massachusetts. Louis Dorpat is the new health officer of Ironwood. He comes highly recommended by the Milwaukee Health Department.

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New York

Dr. Franklin C. Gram, for many years Registrar of Vital Statistics and Superintendent of the Bureau of Communicable Diseases in the Buffalo Department of Health, died on February 3, 1924. Dr. Gram throughout his association with the Buffalo Health Department was a loyal, sympathetic and true friend of preventive medicine. While Health Commissioner Fronczak was absent during the World War Dr. Gram had charge of the Health Department.

Dr. Otto R. Eichel, Director of the Division of Vital Statistics of the State Department of Health, has been granted a leave of absence to accept an invitation from the League of Nations to assume charge of its Service of Epidemiological Intelligence and Public Health Statistics.

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North Carolina

Dr. Morrill L. Ilsley, formerly Director of the Western Division, State Board of Health, has accepted an appointment as Professor of Hygiene and Preventive Medicine at Colgate University, Hamilton, New York.

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The Diagnosis and Cure of Gonorrhea.—The diagnosis is based upon the cultivation of the organism, the use of stained smears, and to some extent upon the complement fixation test. The gonococcus can be cultivated easily if the medium is warmed before inoculating and kept warm until its oxygen tension has been reduced. With proper treatment, the cultivability of the gonococcus seems to disappear first and seldom reappears. The findings of Gram-negative intracellular diplococci is the second factor to disappear; the subjective and objective findings persist longer and the patient cannot be considered to have been cured until they have been entirely eliminated. Despite favorable comment, the author attaches very little value to the findings with the complement fixation test. —G. W. Hartman, Calif. State J. M. San Fran., 1923, 21, 303. *Abstcts. Bact.*, 7:425 (Nov.), 1923.

CONVENTIONS, CONFERENCES AND MEETINGS

This calendar is published through the coöperation of the National Health Council, 370 Seventh Avenue, New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

May 1-3, Association of Food and Drug Officials of the Southeastern States, Jacksonvillle, Fla.

May 5, American Society for Clinical Investigation, Atlantic City, N. J.

May 5, American Gastro-Enterological Association, Atlantic City, N. J.

May 5-10, Kentucky Conference of County and City Health Officers, Louisville, Ky.

May 5-10, New England Health Institute, Boston, Mass.

May 5-10, National Congress of Mothers and Parent-Teacher Associations, St. Paul, Minn.

May 6-7, Association of American Physicians, Atlantic City, N. J.

May 7-10, National Tuberculosis Association, Atlanta, Ga.

May 15-17, American Gynecological Society, Hot Springs, Va.

May 15-17, American Orthopaedic Association, Baltimore, Md.

May 16-17, American Academy of Political and Social Science, Philadelphia, Pa.

May 19-23, American Water Works Association, New York, N. Y.

May 20-22, Arkansas Medical Society, Fayetteville, Ark.

May 26-28, American Association of Genito Urinary Surgeons, Stockbridge, Mass.

May 26-29, American Society of Mechanical Engineers, Cleveland, O.

May 28-June 2, American Association for the Study of the Feebleminded, Washington, D. C.

May 29-31, American Laryngological, Rhinological and Otological Society, St. Louis, Mo.

May 31-June 1, National Federation of Day Nurseries, Toronto, Canada.

June 3-6, American Psychiatric Association, Atlantic City, N. J.

June 3-13, General Federation of Women's Clubs, Los Angeles, Cal.

June 5-7, American Pediatric Society, Pittsfield, Mass.

June 5-7, American Neurological Association, Philadelphia, Pa.

June 5-7, American Dermatological Association, Minneapolis, Minn.

June 9-10, American Association of Medical Milk Commissions, Chicago, Ill.

June 9-10, American Society of Tropical Medicine, Chicago, Ill.

June 9-13, American Medical Association, Chicago, Ill.

June 9-14, Congress of Anesthetists, Chicago, Ill.

June 14, Eugenics Research Association, Cold Spring Harbor, L. I., N. Y.

June 16-17, State and Provincial Health Authorities, Lansing, Mich.

June 16-21, Biennial National Nursing Convention, Detroit, Mich.

June 17-20, National Eclectic Medical Association, Cincinnati, O.

June 24-25, National Association of Travelers Aid Societies, Toronto, Canada.

June 25-July 2, National Conference of Social Work, Toronto, Can.

June 26-July 2, American Association of Hospital Social Workers, Toronto, Canada.

June 29-July 5, National Education Association, Washington, D. C.

June 30-July 4, American Home Economics Association, Buffalo, N. Y.

June 30-July 5, American Library Association, Saratoga Springs, N. Y.

June —, National Probation Association, Toronto, Can.

October 20-23, American Public Health Association, Detroit.

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Parmand's Conjunctivitis.—The author describes a case of Parmand's conjunctivitis in which he was able to demonstrate the leptothrix of Verhoeff (A myelotic disease due to a hitherto undescribed filamentous organism. Arch. Ophth., Vol. 42, 1913), in the areas of cell necrosis.—A. N. Levioine, *J. A. M. A.*, 82:537, (Feb. 16) 1924. M. C.

✤

Gonococcal Infection of the Kidney and Criteria for its Diagnosis.—A case of gonococcal kidney infection is reported. The organism was found by fermentation tests to be gonococcus. The literature has been reviewed and the criteria for the identification of the gonococcus have been discussed and the need of positive bacteriology proof in such cases emphasized.—F. P. Johnson and J. H. Hill, *J. of Urology*, 11:177, (Feb.) 1924. C. C. Y.